

# SEQUENCE LISTING

<110> Shutter, John  
Ulias, Laarni

<120> ATP-Binding Cassette Transporter-Like Molecules and  
Uses Thereof

<130> 00-658-A

<140>

<141>

<150> 60/253,520

<151> 2000-11-28

<160> 24

<170> PatentIn Ver. 2.0

<210> 1

<211> 6633

<212> DNA

<213> Mus musculus

<220>

<221> sig\_peptide

<222> (1)..(138)

<220>

<221> CDS

<222> (1)..(6504)

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Ala Val Leu Ala Gly His Asn Val Ala Gln Glu Arg Ser Ala Ala His	
1875 1880 1885	
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Arg Ser Met Gly Tyr Cys Pro Gln Ser Asp Ala Ile Phe Asp Leu Leu	
1890 1895 1900	
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Pro Gly Ala Glu Leu Arg Glu Val His Gly Ser Arg Leu Arg Phe Gln	
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Ser Asp Thr Asn Leu Glu Glu Ile Phe Leu Lys Val Val Glu Asp Ala  
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Gly Ser Glu Cys Thr His Ser Leu Ala Cys Tyr Phe Thr Val Pro Glu  
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Leu Leu Pro Asp Cys Pro Ala Gly Ala Gly Gly Pro Pro Pro Pro Gln  
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 1795 1800 1805  
 Ala Thr Gln Gly Asp Val Leu Val Leu Arg Asp Leu Thr Lys Val Tyr  
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 1825 1830 1835 1840  
 Pro Gly Glu Cys Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys Thr  
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 Ser Thr Phe Arg Met Val Thr Gly Asp Thr Leu Pro Ser Ser Gly Glu  
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 1940 1945 1950  
 Lys Arg Lys Leu Ala Thr Ala Leu Ala Leu Val Gly Asp Pro Ala Val  
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 Val Phe Leu Asp Glu Pro Thr Thr Gly Met Asp Pro Ser Ala Arg Arg  
 1970 1975 1980  
 Phe Leu Trp Asn Ser Leu Leu Ser Val Val Arg Glu Gly Arg Ser Val  
 1985 1990 1995 2000  
 Val Leu Thr Ser His Ser Met Glu Glu Cys Glu Ala Leu Cys Thr Arg  
 2005 2010 2015  
 Leu Ala Ile Met Val Asn Gly Arg Phe Arg Cys Leu Gly Ser Ser Gln  
 2020 2025 2030



Figure 1. Schematic representation of the experimental design. The figure is divided into two main sections: 'Pre-treatment' and 'Treatment'. The 'Pre-treatment' section shows a 'Pre-treatment' box with 'Pre-treatment' and 'Pre-treatment' labels. The 'Treatment' section shows a 'Treatment' box with 'Treatment' and 'Treatment' labels. The 'Pre-treatment' section also includes a 'Pre-treatment' box with 'Pre-treatment' and 'Pre-treatment' labels. The 'Treatment' section also includes a 'Treatment' box with 'Treatment' and 'Treatment' labels. The figure is divided into two main sections: 'Pre-treatment' and 'Treatment'. The 'Pre-treatment' section shows a 'Pre-treatment' box with 'Pre-treatment' and 'Pre-treatment' labels. The 'Treatment' section shows a 'Treatment' box with 'Treatment' and 'Treatment' labels. The 'Pre-treatment' section also includes a 'Pre-treatment' box with 'Pre-treatment' and 'Pre-treatment' labels. The 'Treatment' section also includes a 'Treatment' box with 'Treatment' and 'Treatment' labels.



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Gly	Leu	Val	Pro	Gly	Val	Ser	Ile	Arg	Gly	Leu	Lys	Lys	His	Phe	Arg
		755					760					765			
Gly	Cys	Pro	Gln	Pro	Ala	Leu	Gln	Gly	Leu	Asn	Leu	Asp	Phe	Tyr	Glu
	770					775					780				
Gly	His	Ile	Thr	Ala	Phe	Leu	Gly	His	Asn	Gly	Ala	Gly	Lys	Thr	Thr
785					790					795					800
Thr	Leu	Ser	Ile	Leu	Ser	Gly	Leu	Phe	Pro	Pro	Ser	Ser	Gly	Ser	Ala
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Ser	Ile	Leu	Gly	His	Asp	Val	Gln	Thr	Asn	Met	Ala	Ala	Ile	Arg	Pro
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His	Leu	Gly	Ile	Cys	Pro	Gln	Tyr	Asn	Val	Leu	Phe	Asp	Met	Leu	Thr
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Thr	Leu	Lys	Arg	Asp	Thr	Gln	Thr	Arg	His	Leu	Ser	Gly	Gly	Met	Gln
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Met	Val	Ala	Gly	Gly	Ser	Leu	Cys	Cys	Cys	Gly	Ser	Pro	Leu	Phe	Leu
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185 190 195 200									
gtg gag ctt cgg gca ctg ctg cag aga ccc cga ggg acc agc ggc ccc	857								
Val Glu Leu Arg Ala Leu Leu Gln Arg Pro Arg Gly Thr Ser Gly Pro									
205 210 215									
ctg gag ttg ctg tca gag gcc ctc tgc agt gtc agg gga cct agc agc	905								
Leu Glu Leu Leu Ser Glu Ala Leu Cys Ser Val Arg Gly Pro Ser Ser									

220	225	230	
aca gtg ggc ccc tcc ctc aac tgg tac gag gct agt gac ctg atg gag Thr Val Gly Pro Ser Leu Asn Trp Tyr Glu Ala Ser Asp Leu Met Glu 235 240 245			953
ctg gtg ggg cag gag cca gaa tcc gcc ctg cca gac agc agc ctg agc Leu Val Gly Gln Glu Pro Glu Ser Ala Leu Pro Asp Ser Ser Leu Ser 250 255 260			1001
ccc gcc tgc tgc gag ctg att gga gcc ctg gac agc cac ccg ctg tcc Pro Ala Cys Ser Glu Leu Ile Gly Ala Leu Asp Ser His Pro Leu Ser 265 270 275 280			1049
cgc ctg ctc tgg aga cgc ctg aag cct ctg atc ctc ggg aag cta ctc Arg Leu Leu Trp Arg Arg Leu Lys Pro Leu Ile Leu Gly Lys Leu Leu 285 290 295			1097
ttt gca cca gat aca cct ttt acc cgg aag ctc atg gcc cag gtg aac Phe Ala Pro Asp Thr Pro Phe Thr Arg Lys Leu Met Ala Gln Val Asn 300 305 310			1145
cgg acc ttc gag gag ctc acc ctg ctg agg gat gtc cgg gag gtg tgg Arg Thr Phe Glu Glu Leu Thr Leu Leu Arg Asp Val Arg Glu Val Trp 315 320 325			1193
gag atg ctg gga ccc cgg atc ttc acc ttc atg aac gac agt tcc aat Glu Met Leu Gly Pro Arg Ile Phe Thr Phe Met Asn Asp Ser Ser Asn 330 335 340			1241
gtg gcc atg ctg cag cgg ctc ctg cag atg cag gat gaa gga aga agg Val Ala Met Leu Gln Arg Leu Leu Gln Met Gln Asp Glu Gly Arg Arg 345 350 355 360			1289
cag ccc aga cct gga ggc cgg gac cac atg gag gcc ctg cga tcc ttt Gln Pro Arg Pro Gly Gly Arg Asp His Met Glu Ala Leu Arg Ser Phe 365 370 375			1337
ctg gac cct ggg agc ggt ggc tac agc tgg cag gac gca cac gct gat Leu Asp Pro Gly Ser Gly Gly Tyr Ser Trp Gln Asp Ala His Ala Asp 380 385 390			1385
gtg ggg cac ctg gtg ggc acg ctg ggc cga gtg acg gag tgc ctg tcc Val Gly His Leu Val Gly Thr Leu Gly Arg Val Thr Glu Cys Leu Ser 395 400 405			1433
ttg gac aag ctg gag gcg gca ccc tca gag gca gcc ctg gtg tgc cgg Leu Asp Lys Leu Glu Ala Ala Pro Ser Glu Ala Ala Leu Val Ser Arg 410 415 420			1481
gcc ctg caa ctg ctc gcg gaa cat cga ttc tgg gcc ggc gtc gtc ttc Ala Leu Gln Leu Leu Ala Glu His Arg Phe Trp Ala Gly Val Val Phe 425 430 435 440			1529
ttg gga cct gag gac tct tca gac ccc aca gag cac cca acc cca gac Leu Gly Pro Glu Asp Ser Ser Asp Pro Thr Glu His Pro Thr Pro Asp 445 450 455			1577

ctg ggc ccc ggc cac gtg cgc atc aaa atc cgc atg gac att gac gtg	1625
Leu Gly Pro Gly His Val Arg Ile Lys Ile Arg Met Asp Ile Asp Val	
460 465 470	
gtc acg agg acc aat aag atc agg gac agg ttt tgg gac cct ggc cca	1673
Val Thr Arg Thr Asn Lys Ile Arg Asp Arg Phe Trp Asp Pro Gly Pro	
475 480 485	
gcc gcg gac ccc ctg acc gac ctg cgc tac gtg tgg ggc ggc ttc gtg	1721
Ala Ala Asp Pro Leu Thr Asp Leu Arg Tyr Val Trp Gly Gly Phe Val	
490 495 500	
tac ctg caa gac ctg gtg gag cgt gca gcc gtc cgc gtg ctc agc ggc	1769
Tyr Leu Gln Asp Leu Val Glu Arg Ala Ala Val Arg Val Leu Ser Gly	
505 510 515 520	
gcc aac ccc cgg gcc ggc ctc tac ctg cag cag atg ccc tat ccg tgc	1817
Ala Asn Pro Arg Ala Gly Leu Tyr Leu Gln Gln Met Pro Tyr Pro Cys	
525 530 535	
tat gtg gac gac gtg ttc ctg cgt gtg ctg agc cgg tcg ctg ccg ctc	1865
Tyr Val Asp Asp Val Phe Leu Arg Val Leu Ser Arg Ser Leu Pro Leu	
540 545 550	
ttc ctg acg ctg gcc tgg atc tac tcc gtg aca ctg aca gtg aag gcc	1913
Phe Leu Thr Leu Ala Trp Ile Tyr Ser Val Thr Leu Thr Val Lys Ala	
555 560 565	
gtg gtg cgg gag aag gag acg cgg ctg cgg gac acc atg cgc gcc atg	1961
Val Val Arg Glu Lys Glu Thr Arg Leu Arg Asp Thr Met Arg Ala Met	
570 575 580	
ggg ctc agc cgc gcg gtg ctc tgg cta ggc tgg ttc ctc agc tgc ctc	2009
Gly Leu Ser Arg Ala Val Leu Trp Leu Gly Trp Phe Leu Ser Cys Leu	
585 590 595 600	
ggg ccc ttc ctg ctc agc gcc gcg ctg ctg gtt ctg gtg ctc aag ctg	2057
Gly Pro Phe Leu Leu Ser Ala Ala Leu Leu Val Leu Val Leu Lys Leu	
605 610 615	
ggg gac atc ctc ccc tac agc cac ccg ggc gtg gtc ttc ctg ttc ttg	2105
Gly Asp Ile Leu Pro Tyr Ser His Pro Gly Val Val Phe Leu Phe Leu	
620 625 630	
gca gcc ttc gcg gtg gcc acg gtg acc cag agc ttc ctg ctc agc gcc	2153
Ala Ala Phe Ala Val Ala Thr Val Thr Gln Ser Phe Leu Leu Ser Ala	
635 640 645	
ttc ttc tcc cgc gcc aac ctg gct gcg gcc tgc ggc ggc ctg gcc tac	2201
Phe Phe Ser Arg Ala Asn Lys Ala Ala Ala Cys Gly Gly Leu Ala Tyr	
650 655 660	
ttc tcc ctc tac ctg ccc tac gtg ctg tgt gtg gct tgg cgg gac cgg	2249
Phe Ser Leu Tyr Leu Pro Tyr Val Leu Cys Val Ala Trp Arg Asp Arg	
665 670 675 680	

ctg ccc gcg ggt ggc cgc gtg gcc gcg agc ctg ctg tcg ccc gtg gcc	2297
Leu Pro Ala Gly Gly Arg Val Ala Ala Ser Leu Leu Ser Pro Val Ala	
685 690 695	
ttc ggc ttc ggc tgc gag agc ctg gct ctg ctg gag gag cag ggc gag	2345
Phe Gly Phe Gly Cys Glu Ser Leu Ala Leu Leu Glu Glu Gln Gly Glu	
700 705 710	
ggc gcg cag tgg cac aac gtg ggc acc cgg cct acg gca gac gtc ttc	2393
Gly Ala Gln Trp His Asn Val Gly Thr Arg Pro Thr Ala Asp Val Phe	
715 720 725	
agc ctg gcc cag gtc tct ggc ctt ctg ctg ctg gac gcg gcg ctc tac	2441
Ser Leu Ala Gln Val Ser Gly Leu Leu Leu Leu Asp Ala Ala Leu Tyr	
730 735 740	
ggc ctc gcc acc tgg tac ctg gaa gct gtg tgc cca ggc cag tac ggg	2489
Gly Leu Ala Thr Trp Tyr Leu Glu Ala Val Cys Pro Gly Gln Tyr Gly	
745 750 755 760	
atc cct gaa cca tgg aat ttt cct ttt cgg agg agc tac tgg tgc gga	2537
Ile Pro Glu Pro Trp Asn Phe Pro Phe Arg Arg Ser Tyr Trp Cys Gly	
765 770 775	
cct cgg ccc ccc aag agt cca gcc cct tgc ccc acc ccg ctg gac cca	2585
Pro Arg Pro Pro Lys Ser Pro Ala Pro Cys Pro Thr Pro Leu Asp Pro	
780 785 790	
aag gtg ctg gta gaa gag gca ccg ccc ggc ctg agt cct ggc gta tcc	2633
Lys Val Leu Val Glu Glu Ala Pro Pro Gly Leu Ser Pro Gly Val Ser	
795 800 805	
gtt cgc agc ctg gag aag cgc ttt cct gga agc ccg cag cca gcc ctg	2681
Val Arg Ser Leu Glu Lys Arg Phe Pro Gly Ser Pro Gln Pro Ala Leu	
810 815 820	
cgg ggg ctc agc ctg gac ttc tac cag ggc cac atc acc gcc ttc ctg	2729
Arg Gly Leu Ser Leu Asp Phe Tyr Gln Gly His Ile Thr Ala Phe Leu	
825 830 835 840	
ggc cac aac ggg gcc ggc aag acc acc acc ctg tcc atc ttg agt ggc	2777
Gly His Asn Gly Ala Gly Lys Thr Thr Thr Leu Ser Ile Leu Ser Gly	
845 850 855	
ctc ttc cca ccc agt ggt ggc tct gcc ttc atc ctg ggc cac gac gtc	2825
Leu Phe Pro Pro Ser Gly Gly Ser Ala Phe Ile Leu Gly His Asp Val	
860 865 870	
cgc tcc agc atg gcc gcc atc cgg ccc cac ctg ggc gtc tgt cct cag	2873
Arg Ser Ser Met Ala Ala Ile Arg Pro His Leu Gly Val Cys Pro Gln	
875 880 885	
tac aac gtg ctg ttt gac atg ctg acc gtg gac gag cac gtc tgg ttc	2921
Tyr Asn Val Leu Phe Asp Met Leu Thr Val Asp Glu His Val Trp Phe	
890 895 900	
tat ggg cgg ctg aag ggt ctg agt gcc gct gta gtg ggc ccc gag cag	2969

Tyr	Gly	Arg	Leu	Lys	Gly	Leu	Ser	Ala	Ala	Val	Val	Gly	Pro	Glu	Gln		
905					910					915					920		
gac	cgt	ctg	ctg	cag	gat	gtg	ggg	ctg	gtc	tcc	aag	cag	agt	gtg	cag		3017
Asp	Arg	Leu	Leu	Gln	Asp	Val	Gly	Leu	Val	Ser	Lys	Gln	Ser	Val	Gln		
				925					930					935			
act	cgc	cac	ctc	tct	ggg	ggg	atg	caa	cgg	aag	ctg	tcc	gtg	gcc	att		3065
Thr	Arg	His	Leu	Ser	Gly	Gly	Met	Gln	Arg	Lys	Leu	Ser	Val	Ala	Ile		
			940					945					950				
gcc	ttt	gtg	ggc	ggc	tcc	caa	gtt	gtt	atc	ctg	gac	gag	cct	acg	gct		3113
Ala	Phe	Val	Gly	Gly	Ser	Gln	Val	Val	Ile	Leu	Asp	Glu	Pro	Thr	Ala		
		955					960					965					
ggc	gtg	gat	cct	gct	tcc	cgc	cgc	ggg	att	tgg	gag	ctg	ctg	ctc	aaa		3161
Gly	Val	Asp	Pro	Ala	Ser	Arg	Arg	Gly	Ile	Trp	Glu	Leu	Leu	Leu	Lys		
	970					975					980						
tac	cga	gaa	ggg	cgc	acg	ctg	atc	ctc	tcc	acc	cac	cac	ctg	gat	gag		3209
Tyr	Arg	Glu	Gly	Arg	Thr	Leu	Ile	Leu	Ser	Thr	His	His	Leu	Asp	Glu		
	985				990					995					1000		
gca	gag	ctg	ctg	gga	gac	cgt	gtg	gct	gtg	gtg	gca	ggg	ggc	cgc	ttg		3257
Ala	Glu	Leu	Leu	Gly	Asp	Arg	Val	Ala	Val	Val	Ala	Gly	Gly	Arg	Leu		
				1005				1010					1015				
tgc	tgc	tgt	ggc	tcc	cca	ctc	ttc	ctg	cgc	cgt	cac	ctg	ggc	tcc	ggc		3305
Cys	Cys	Cys	Gly	Ser	Pro	Leu	Phe	Leu	Arg	Arg	His	Leu	Gly	Ser	Gly		
			1020				1025					1030					
tac	tac	ctg	acg	ctg	gtg	aag	gcc	cgc	ctg	ccc	ctg	acc	acc	aat	gag		3353
Tyr	Tyr	Leu	Thr	Leu	Val	Lys	Ala	Arg	Leu	Pro	Leu	Thr	Thr	Asn	Glu		
		1035				1040					1045						
aag	gct	gac	act	gac	atg	gag	ggc	agt	gtg	gac	acc	agg	cag	gaa	aag		3401
Lys	Ala	Asp	Thr	Asp	Met	Glu	Gly	Ser	Val	Asp	Thr	Arg	Gln	Glu	Lys		
	1050				1055					1060							
aag	aat	ggc	agc	cag	ggc	agc	aga	gtc	ggc	act	cct	cag	ctg	ctg	gcc		3449
Lys	Asn	Gly	Ser	Gln	Gly	Ser	Arg	Val	Gly	Thr	Pro	Gln	Leu	Leu	Ala		
	1065			1070				1075					1080				
ctg	gta	cag	cac	tgg	gtg	ccc	ggg	gca	cgg	ctg	gtg	gag	gag	ctg	cca		3497
Leu	Val	Gln	His	Trp	Val	Pro	Gly	Ala	Arg	Leu	Val	Glu	Glu	Leu	Pro		
				1085				1090					1095				
cac	gag	ctg	gtg	ctg	gtg	ctg	ccc	tac	acg	ggg	gcc	cat	gac	ggc	agc		3545
His	Glu	Leu	Val	Leu	Val	Leu	Pro	Tyr	Thr	Gly	Ala	His	Asp	Gly	Ser		
			1100				1105				1110						
ttc	gcc	aca	ctc	ttc	cga	gag	cta	gac	acg	cgg	ctg	gcg	gag	ctg	agg		3593
Phe	Ala	Thr	Leu	Phe	Arg	Glu	Leu	Asp	Thr	Arg	Leu	Ala	Glu	Leu	Arg		
	1115					1120					1125						
ctc	act	ggc	tac	ggg	atc	tcc	gac	acc	agc	ctc	gag	gag	atc	ttc	ctg		3641
Leu	Thr	Gly	Tyr	Gly	Ile	Ser	Asp	Thr	Ser	Leu	Glu	Glu	Ile	Phe	Leu		

1130	1135	1140	
aag gtg gtg gag gag tgt gct gcg gac aca gat atg gag gat ggc agc			3689
Lys Val Val Glu Glu Cys Ala Ala Asp Thr Asp Met Glu Asp Gly Ser			
1145	1150	1155	1160
tgc ggg cag cac cta tgc aca ggc att gct ggc cta gac gta acc ctg			3737
Cys Gly Gln His Leu Cys Thr Gly Ile Ala Gly Leu Asp Val Thr Leu			
1165	1170	1175	
cgg ctc aag atg ccg cca cag gag aca gcg ctg gag aac ggg gaa cca			3785
Arg Leu Lys Met Pro Pro Gln Glu Thr Ala Leu Glu Asn Gly Glu Pro			
1180	1185	1190	
gct ggg tca gcc cca gag act gac cag ggc tct ggg cca gac gcc gtg			3833
Ala Gly Ser Ala Pro Glu Thr Asp Gln Gly Ser Gly Pro Asp Ala Val			
1195	1200	1205	
ggc cgg gta cag ggc tgg gca ctg acc cgc cag cag ctc cag gcc ctg			3881
Gly Arg Val Gln Gly Trp Ala Leu Thr Arg Gln Gln Leu Gln Ala Leu			
1210	1215	1220	
ctt ctc aag cgc ttt ctg ctt gcc cgc cgc agc cgc cgc ggc ctg ttc			3929
Leu Leu Lys Arg Phe Leu Leu Ala Arg Arg Ser Arg Arg Gly Leu Phe			
1225	1230	1235	1240
gcc cag atc gtg ctg cct gcc ctc ttt gtg ggc ctg gcc ctc gtg ttc			3977
Ala Gln Ile Val Leu Pro Ala Leu Phe Val Gly Leu Ala Leu Val Phe			
1245	1250	1255	
agc ctc atc gtg cct cct ttc ggg cac tac ccg gct ctg cgg ctc agt			4025
Ser Leu Ile Val Pro Pro Phe Gly His Tyr Pro Ala Leu Arg Leu Ser			
1260	1265	1270	
ccc acc atg tac ggt gct cag gtg tcc ttc ttc agt gag gac gcc cca			4073
Pro Thr Met Tyr Gly Ala Gln Val Ser Phe Phe Ser Glu Asp Ala Pro			
1275	1280	1285	
ggg gac cct gga cgt gcc cgg ctg ctc gag gcg ctg ctg cag gag gca			4121
Gly Asp Pro Gly Arg Ala Arg Leu Leu Glu Ala Leu Leu Gln Glu Ala			
1290	1295	1300	
gga ctg gag gag ccc cca gtg cag cat agc tcc cac agg ttc tcg gca			4169
Gly Leu Glu Glu Pro Pro Val Gln His Ser Ser His Arg Phe Ser Ala			
1305	1310	1315	1320
cca gaa gtt cct gct gaa gtg gcc aag gtc ttg gcc agt ggc aac tgg			4217
Pro Glu Val Pro Ala Glu Val Ala Lys Val Leu Ala Ser Gly Asn Trp			
1325	1330	1335	
acc cca gag tct cca tcc cca gcc tgc cag tgt agc cag ccc ggt gcc			4265
Thr Pro Glu Ser Pro Ser Pro Ala Cys Gln Cys Ser Gln Pro Gly Ala			
1340	1345	1350	
cgg cgc ctg ctg ccc gac tgc ccg gct gca gct ggt ggt ccc cct ccg			4313
Arg Arg Leu Leu Pro Asp Cys Pro Ala Ala Ala Gly Gly Pro Pro Pro			
1355	1360	1365	

ccc cag gca gtg acc ggc tct ggg gaa gtg gtt cag aac ctg aca ggc	4361
Pro Gln Ala Val Thr Gly Ser Gly Glu Val Val Gln Asn Leu Thr Gly	
1370 1375 1380	
cgg aac ctg tct gac ttc ctg gtc aag acc tac ccg cgc ctg gtg cgc	4409
Arg Asn Leu Ser Asp Phe Leu Val Lys Thr Tyr Pro Arg Leu Val Arg	
1385 1390 1395 1400	
cag ggc ctg aag act aag aag tgg gtg aat gag gtc agg tac gga ggc	4457
Gln Gly Leu Lys Thr Lys Lys Trp Val Asn Glu Val Arg Tyr Gly Gly	
1405 1410 1415	
ttc tcg ctg ggg ggc cga gac cca ggc ctg ccc tcg ggc caa gag ttg	4505
Phe Ser Leu Gly Gly Arg Asp Pro Gly Leu Pro Ser Gly Gln Glu Leu	
1420 1425 1430	
ggc cgc tca gtg gag gag ttg tgg gcg ctg ctg agt ccc ctg cct ggc	4553
Gly Arg Ser Val Glu Glu Leu Trp Ala Leu Leu Ser Pro Leu Pro Gly	
1435 1440 1445	
ggg gcc ctc gac cgt gtc ctg aaa aac ctc aca gcc tgg gct cac agc	4601
Gly Ala Leu Asp Arg Val Leu Lys Asn Leu Thr Ala Trp Ala His Ser	
1450 1455 1460	
ctg gat gct cag gac agt ctc aag atc tgg ttc aac aac aaa ggc tgg	4649
Leu Asp Ala Gln Asp Ser Leu Lys Ile Trp Phe Asn Asn Lys Gly Trp	
1465 1470 1475 1480	
cac tcc atg gtg gcc ttt gtc aac cga gcc agc aac gca atc ctc cgt	4697
His Ser Met Val Ala Phe Val Asn Arg Ala Ser Asn Ala Ile Leu Arg	
1485 1490 1495	
gct cac ctg ccc cca ggc ccg gcc cgc cac gcc cac agc atc acc aca	4745
Ala His Leu Pro Pro Gly Pro Ala Arg His Ala His Ser Ile Thr Thr	
1500 1505 1510	
ctc aac cac ccc ttg aac ctc acc aag gag cag ctg tct gag gct gca	4793
Leu Asn His Pro Leu Asn Leu Thr Lys Glu Gln Leu Ser Glu Ala Ala	
1515 1520 1525	
ctg atg gcc tcc tcg gtg gac gtc ctc gtc tcc atc tgt gtg gtc ttt	4841
Leu Met Ala Ser Ser Val Asp Val Leu Val Ser Ile Cys Val Val Phe	
1530 1535 1540	
gcc atg tcc ttt gtc ccg gcc agc ttc act ctt gtc ctc att gag gag	4889
Ala Met Ser Phe Val Pro Ala Ser Phe Thr Leu Val Leu Ile Glu Glu	
1545 1550 1555 1560	
cga gtc acc cga gcc aag cac ctg cag ctc atg ggg ggc ctg tcc ccc	4937
Arg Val Thr Arg Ala Lys His Leu Gln Leu Met Gly Gly Leu Ser Pro	
1565 1570 1575	
acc ctc tac tgg ctt ggc aac ttt ctc tgg gac atg tgt aac tac ttg	4985
Thr Leu Tyr Trp Leu Gly Asn Phe Leu Trp Asp Met Cys Asn Tyr Leu	
1580 1585 1590	



gtg cca gca tgc atc gtg gtg ctc atc ttt ctg gcc ttc cag cag agg	5033
Val Pro Ala Cys Ile Val Val Leu Ile Phe Leu Ala Phe Gln Gln Arg	
1595 1600 1605	
gca tat gtg gcc cct gcc aac ctg cct gct ctc ctg ctg ttg cta cta	5081
Ala Tyr Val Ala Pro Ala Asn Leu Pro Ala Leu Leu Leu Leu Leu Leu	
1610 1615 1620	
ctg tat ggc tgg tgg atc aca ccg ctc atg tac cca gcc tcc ttc ttc	5129
Leu Tyr Gly Trp Ser Ile Thr Pro Leu Met Tyr Pro Ala Ser Phe Phe	
1625 1630 1635 1640	
ttc tcc gtg ccc agc aca gcc tat gtg gtg ctc acc tgc ata aac ctc	5177
Phe Ser Val Pro Ser Thr Ala Tyr Val Val Leu Thr Cys Ile Asn Leu	
1645 1650 1655	
ttt att ggc atc aat gga agc atg gcc acc ttt gtg ctt gag ctc ttc	5225
Phe Ile Gly Ile Asn Gly Ser Met Ala Thr Phe Val Leu Glu Leu Phe	
1660 1665 1670	
tct gat cag aag ctg cag gag gtg agc cgg atc ttg aaa cag gtc ttc	5273
Ser Asp Gln Lys Leu Gln Glu Val Ser Arg Ile Leu Lys Gln Val Phe	
1675 1680 1685	
ctt atc ttc ccc cac ttc tgc ttg ggc cgg ggg ctc att gac atg gtg	5321
Leu Ile Phe Pro His Phe Cys Leu Gly Arg Gly Leu Ile Asp Met Val	
1690 1695 1700	
cgg aac cag gcc atg gct gat gcc ttt gag cgc ttg gga gac agg cag	5369
Arg Asn Gln Ala Met Ala Asp Ala Phe Glu Arg Leu Gly Asp Arg Gln	
1705 1710 1715 1720	
ttc cag tca ccc ctg cgc tgg gag gtg gtc ggc aag aac ctc ttg gcc	5417
Phe Gln Ser Pro Leu Arg Trp Glu Val Val Gly Lys Asn Leu Leu Ala	
1725 1730 1735	
atg gtg ata cag ggg ccc ctc ttc ctt ctc ttc aca cta ctg ctg cag	5465
Met Val Ile Gln Gly Pro Leu Phe Leu Leu Phe Thr Leu Leu Leu Gln	
1740 1745 1750	
cac cga agc caa ctc ctg cca cag ccc agg gtg agg tct ctg cca ctc	5513
His Arg Ser Gln Leu Leu Pro Gln Pro Arg Val Arg Ser Leu Pro Leu	
1755 1760 1765	
ctg gga gag gag gac gag gat gta gcc cgt gaa cgg gag cgg gtg gtc	5561
Leu Gly Glu Glu Asp Glu Asp Val Ala Arg Glu Arg Glu Arg Val Val	
1770 1775 1780	
caa gga gcc acc cag ggg gat gtg ttg gtg ctg agg aac ttg acc aag	5609
Gln Gly Ala Thr Gln Gly Asp Val Leu Val Leu Arg Asn Leu Thr Lys	
1785 1790 1795 1800	
gta tac cgt ggg cag agg atg cca gct gtt gac cgc ttg tgc ctg ggg	5657
Val Tyr Arg Gly Gln Arg Met Pro Ala Val Asp Arg Leu Cys Leu Gly	
1805 1810 1815	
att ccc cct ggt gag tgt ttt ggg ctg ctg ggt gtg aat gga gca ggg	5705

Ile	Pro	Pro	Gly	Glu	Cys	Phe	Gly	Leu	Leu	Gly	Val	Asn	Gly	Ala	Gly		
			1820					1825					1830				
aag	acg	tcc	acg	ttt	cgc	atg	gtg	acg	ggg	gac	aca	ttg	gcc	agc	agg	5753	
Lys	Thr	Ser	Thr	Phe	Arg	Met	Val	Thr	Gly	Asp	Thr	Leu	Ala	Ser	Arg		
		1835					1840					1845					
ggc	gag	gct	gtg	ctg	gca	ggc	cac	agc	gtg	gcc	cgg	gaa	ccc	agt	gct	5801	
Gly	Glu	Ala	Val	Leu	Ala	Gly	His	Ser	Val	Ala	Arg	Glu	Pro	Ser	Ala		
		1850				1855					1860						
gcg	cac	ctc	agc	atg	gga	tac	tgc	cct	caa	tcc	gat	gcc	atc	ttt	gag	5849	
Ala	His	Leu	Ser	Met	Gly	Tyr	Cys	Pro	Gln	Ser	Asp	Ala	Ile	Phe	Glu		
		1865				1870				1875				1880			
ctg	ctg	acg	ggc	cgc	gag	cac	ctg	gag	ctg	ctt	gcg	cgc	ctg	cgc	ggt	5897	
Leu	Leu	Thr	Gly	Arg	Glu	His	Leu	Glu	Leu	Leu	Ala	Arg	Leu	Arg	Gly		
			1885					1890					1895				
gtc	ccg	gag	gcc	cag	gtt	gcc	cag	acc	gct	ggc	tca	ggc	ctg	gcg	cgt	5945	
Val	Pro	Glu	Ala	Gln	Val	Ala	Gln	Thr	Ala	Gly	Ser	Gly	Leu	Ala	Arg		
		1900					1905					1910					
ctg	gga	ctc	tca	tgg	tac	gca	gac	cgg	cct	gca	ggc	acc	tac	agc	gga	5993	
Leu	Gly	Leu	Ser	Trp	Tyr	Ala	Asp	Arg	Pro	Ala	Gly	Thr	Tyr	Ser	Gly		
		1915					1920				1925						
ggg	aac	aaa	cgc	aag	ctg	gcg	acg	gcc	ctg	gcg	ctg	gtt	ggg	gac	cca	6041	
Gly	Asn	Lys	Arg	Lys	Leu	Ala	Thr	Ala	Leu	Ala	Leu	Val	Gly	Asp	Pro		
		1930				1935					1940						
gcc	gtg	gtg	ttt	ctg	gac	gag	ccg	acc	aca	ggc	atg	gac	ccc	agc	gcg	6089	
Ala	Val	Val	Phe	Leu	Asp	Glu	Pro	Thr	Thr	Gly	Met	Asp	Pro	Ser	Ala		
		1945			1950				1955			1960					
cgg	cgc	ttc	ctt	tgg	aac	agc	ctt	ttg	gcc	gtg	gtg	cgg	gag	ggc	cgt	6137	
Arg	Arg	Phe	Leu	Trp	Asn	Ser	Leu	Leu	Ala	Val	Val	Arg	Glu	Gly	Arg		
			1965				1970					1975					
tca	gtg	atg	ctc	acc	tcc	cat	agc	atg	gag	gag	tgt	gaa	gcg	ctc	tgc	6185	
Ser	Val	Met	Leu	Thr	Ser	His	Ser	Met	Glu	Glu	Cys	Glu	Ala	Leu	Cys		
			1980				1985					1990					
tcg	cgc	cta	gcc	atc	atg	gtg	aat	ggg	cgg	ttc	cgc	tgc	ctg	ggc	agc	6233	
Ser	Arg	Leu	Ala	Ile	Met	Val	Asn	Gly	Arg	Phe	Arg	Cys	Leu	Gly	Ser		
		1995				2000					2005						
ccg	caa	cat	ctc	aag	ggc	aga	ttc	gcg	gcg	ggt	cac	aca	ctg	acc	ctg	6281	
Pro	Gln	His	Leu	Lys	Gly	Arg	Phe	Ala	Ala	Gly	His	Thr	Leu	Thr	Leu		
		2010				2015				2020							
cgg	gtg	ccc	gcc	gca	agg	tcc	cag	ccg	gca	gcg	gcc	ttc	gtg	gcg	gcc	6329	
Arg	Val	Pro	Ala	Ala	Arg	Ser	Gln	Pro	Ala	Ala	Ala	Phe	Val	Ala	Ala		
		2025			2030				2035			2040					
gag	ttc	cct	ggg	tcg	gag	ctg	cgc	gag	gca	cat	gga	ggc	cgc	ctg	cgc	6377	
Glu	Phe	Pro	Gly	Ser	Glu	Leu	Arg	Glu	Ala	His	Gly	Gly	Arg	Leu	Arg		



Phe Asn Asp Ser Leu Val Ser Arg Leu Leu Ala Asp Ala Arg Thr Val  
 100 105 110  
 Leu Gly Gly Ala Ser Ala His Arg Thr Leu Ala Gly Leu Gly Lys Leu  
 115 120 125  
 Ile Ala Thr Leu Arg Ala Ala Arg Ser Thr Ala Gln Pro Gln Pro Thr  
 130 135 140  
 Lys Gln Ser Pro Leu Glu Pro Pro Met Leu Asp Val Ala Glu Leu Leu  
 145 150 155 160  
 Thr Ser Leu Leu Arg Thr Glu Ser Leu Gly Leu Ala Leu Gly Gln Ala  
 165 170 175  
 Gln Glu Pro Leu His Ser Leu Leu Glu Ala Ala Glu Asp Leu Ala Gln  
 180 185 190  
 Glu Leu Leu Ala Leu Arg Ser Leu Val Glu Leu Arg Ala Leu Leu Gln  
 195 200 205  
 Arg Pro Arg Gly Thr Ser Gly Pro Leu Glu Leu Leu Ser Glu Ala Leu  
 210 215 220  
 Cys Ser Val Arg Gly Pro Ser Ser Thr Val Gly Pro Ser Leu Asn Trp  
 225 230 235 240  
 Tyr Glu Ala Ser Asp Leu Met Glu Leu Val Gly Gln Glu Pro Glu Ser  
 245 250 255  
 Ala Leu Pro Asp Ser Ser Leu Ser Pro Ala Cys Ser Glu Leu Ile Gly  
 260 265 270  
 Ala Leu Asp Ser His Pro Leu Ser Arg Leu Leu Trp Arg Arg Leu Lys  
 275 280 285  
 Pro Leu Ile Leu Gly Lys Leu Leu Phe Ala Pro Asp Thr Pro Phe Thr  
 290 295 300  
 Arg Lys Leu Met Ala Gln Val Asn Arg Thr Phe Glu Glu Leu Thr Leu  
 305 310 315 320  
 Leu Arg Asp Val Arg Glu Val Trp Glu Met Leu Gly Pro Arg Ile Phe  
 325 330 335  
 Thr Phe Met Asn Asp Ser Ser Asn Val Ala Met Leu Gln Arg Leu Leu  
 340 345 350  
 Gln Met Gln Asp Glu Gly Arg Arg Gln Pro Arg Pro Gly Gly Arg Asp  
 355 360 365  
 His Met Glu Ala Leu Arg Ser Phe Leu Asp Pro Gly Ser Gly Gly Tyr  
 370 375 380  
 Ser Trp Gln Asp Ala His Ala Asp Val Gly His Leu Val Gly Thr Leu  
 385 390 395 400

Gly	Arg	Val	Thr	Glu	Cys	Leu	Ser	Leu	Asp	Lys	Leu	Glu	Ala	Ala	Pro
				405				410				415			
Ser	Glu	Ala	Ala	Leu	Val	Ser	Arg	Ala	Leu	Gln	Leu	Leu	Ala	Glu	His
				420				425				430			
Arg	Phe	Trp	Ala	Gly	Val	Val	Phe	Leu	Gly	Pro	Glu	Asp	Ser	Ser	Asp
				435				440				445			
Pro	Thr	Glu	His	Pro	Thr	Pro	Asp	Leu	Gly	Pro	Gly	His	Val	Arg	Ile
				450				455				460			
Lys	Ile	Arg	Met	Asp	Ile	Asp	Val	Val	Thr	Arg	Thr	Asn	Lys	Ile	Arg
				465				470				475			
Asp	Arg	Phe	Trp	Asp	Pro	Gly	Pro	Ala	Ala	Asp	Pro	Leu	Thr	Asp	Leu
				485				490				495			
Arg	Tyr	Val	Trp	Gly	Gly	Phe	Val	Tyr	Leu	Gln	Asp	Leu	Val	Glu	Arg
				500				505				510			
Ala	Ala	Val	Arg	Val	Leu	Ser	Gly	Ala	Asn	Pro	Arg	Ala	Gly	Leu	Tyr
				515				520				525			
Leu	Gln	Gln	Met	Pro	Tyr	Pro	Cys	Tyr	Val	Asp	Asp	Val	Phe	Leu	Arg
				530				535				540			
Val	Leu	Ser	Arg	Ser	Leu	Pro	Leu	Phe	Leu	Thr	Leu	Ala	Trp	Ile	Tyr
				545				550				555			
Ser	Val	Thr	Leu	Thr	Val	Lys	Ala	Val	Val	Arg	Glu	Lys	Glu	Thr	Arg
				565				570				575			
Leu	Arg	Asp	Thr	Met	Arg	Ala	Met	Gly	Leu	Ser	Arg	Ala	Val	Leu	Trp
				580				585				590			
Leu	Gly	Trp	Phe	Leu	Ser	Cys	Leu	Gly	Pro	Phe	Leu	Leu	Ser	Ala	Ala
				595				600				605			
Leu	Leu	Val	Leu	Val	Leu	Lys	Leu	Gly	Asp	Ile	Leu	Pro	Tyr	Ser	His
				610				615				620			
Pro	Gly	Val	Val	Phe	Leu	Phe	Leu	Ala	Ala	Phe	Ala	Val	Ala	Thr	Val
				625				630				635			
Thr	Gln	Ser	Phe	Leu	Leu	Ser	Ala	Phe	Phe	Ser	Arg	Ala	Asn	Leu	Ala
				645				650				655			
Ala	Ala	Cys	Gly	Gly	Leu	Ala	Tyr	Phe	Ser	Leu	Tyr	Leu	Pro	Tyr	Val
				660				665				670			
Leu	Cys	Val	Ala	Trp	Arg	Asp	Arg	Leu	Pro	Ala	Gly	Gly	Arg	Val	Ala
				675				680				685			
Ala	Ser	Leu	Leu	Ser	Pro	Val	Ala	Phe	Gly	Phe	Gly	Cys	Glu	Ser	Leu
				690				695				700			

Ala	Leu	Leu	Glu	Glu	Gln	Gly	Glu	Gly	Ala	Gln	Trp	His	Asn	Val	Gly	
705					710					715					720	
Thr	Arg	Pro	Thr	Ala	Asp	Val	Phe	Ser	Leu	Ala	Gln	Val	Ser	Gly	Leu	
				725					730					735		
Leu	Leu	Leu	Asp	Ala	Ala	Leu	Tyr	Gly	Leu	Ala	Thr	Trp	Tyr	Leu	Glu	
			740					745					750			
Ala	Val	Cys	Pro	Gly	Gln	Tyr	Gly	Ile	Pro	Glu	Pro	Trp	Asn	Phe	Pro	
		755					760					765				
Phe	Arg	Arg	Ser	Tyr	Trp	Cys	Gly	Pro	Arg	Pro	Pro	Lys	Ser	Pro	Ala	
	770					775					780					
Pro	Cys	Pro	Thr	Pro	Leu	Asp	Pro	Lys	Val	Leu	Val	Glu	Glu	Ala	Pro	
785					790					795					800	
Pro	Gly	Leu	Ser	Pro	Gly	Val	Ser	Val	Arg	Ser	Leu	Glu	Lys	Arg	Phe	
				805					810					815		
Pro	Gly	Ser	Pro	Gln	Pro	Ala	Leu	Arg	Gly	Leu	Ser	Leu	Asp	Phe	Tyr	
			820					825					830			
Gln	Gly	His	Ile	Thr	Ala	Phe	Leu	Gly	His	Asn	Gly	Ala	Gly	Lys	Thr	
		835					840					845				
Thr	Thr	Leu	Ser	Ile	Leu	Ser	Gly	Leu	Phe	Pro	Pro	Ser	Gly	Gly	Ser	
		850				855						860				
Ala	Phe	Ile	Leu	Gly	His	Asp	Val	Arg	Ser	Ser	Met	Ala	Ala	Ile	Arg	
865					870					875					880	
Pro	His	Leu	Gly	Val	Cys	Pro	Gln	Tyr	Asn	Val	Leu	Phe	Asp	Met	Leu	
				885					890					895		
Thr	Val	Asp	Glu	His	Val	Trp	Phe	Tyr	Gly	Arg	Leu	Lys	Gly	Leu	Ser	
		900						905					910			
Ala	Ala	Val	Val	Gly	Pro	Glu	Gln	Asp	Arg	Leu	Leu	Gln	Asp	Val	Gly	
		915					920					925				
Leu	Val	Ser	Lys	Gln	Ser	Val	Gln	Thr	Arg	His	Leu	Ser	Gly	Gly	Met	
	930					935					940					
Gln	Arg	Lys	Leu	Ser	Val	Ala	Ile	Ala	Phe	Val	Gly	Gly	Ser	Gln	Val	
945					950				955						960	
Val	Ile	Leu	Asp	Glu	Pro	Thr	Ala	Gly	Val	Asp	Pro	Ala	Ser	Arg	Arg	
			965					970					975			
Gly	Ile	Trp	Glu	Leu	Leu	Leu	Lys	Tyr	Arg	Glu	Gly	Arg	Thr	Leu	Ile	
			980					985					990			
Leu	Ser	Thr	His	His	Leu	Asp	Glu	Ala	Glu	Leu	Leu	Gly	Asp	Arg	Val	
		995					1000					1005				

Ala Val Val Ala Gly Gly Arg Leu Cys Cys Cys Gly Ser Pro Leu Phe  
 1010 1015 1020

Leu Arg Arg His Leu Gly Ser Gly Tyr Tyr Leu Thr Leu Val Lys Ala  
 1025 1030 1035 1040

Arg Leu Pro Leu Thr Thr Asn Glu Lys Ala Asp Thr Asp Met Glu Gly  
 1045 1050 1055

Ser Val Asp Thr Arg Gln Glu Lys Lys Asn Gly Ser Gln Gly Ser Arg  
 1060 1065 1070

Val Gly Thr Pro Gln Leu Leu Ala Leu Val Gln His Trp Val Pro Gly  
 1075 1080 1085

Ala Arg Leu Val Glu Glu Leu Pro His Glu Leu Val Leu Val Leu Pro  
 1090 1095 1100

Tyr Thr Gly Ala His Asp Gly Ser Phe Ala Thr Leu Phe Arg Glu Leu  
 1105 1110 1115 1120

Asp Thr Arg Leu Ala Glu Leu Arg Leu Thr Gly Tyr Gly Ile Ser Asp  
 1125 1130 1135

Thr Ser Leu Glu Glu Ile Phe Leu Lys Val Val Glu Glu Cys Ala Ala  
 1140 1145 1150

Asp Thr Asp Met Glu Asp Gly Ser Cys Gly Gln His Leu Cys Thr Gly  
 1155 1160 1165

Ile Ala Gly Leu Asp Val Thr Leu Arg Leu Lys Met Pro Pro Gln Glu  
 1170 1175 1180

Thr Ala Leu Glu Asn Gly Glu Pro Ala Gly Ser Ala Pro Glu Thr Asp  
 1185 1190 1195 1200

Gln Gly Ser Gly Pro Asp Ala Val Gly Arg Val Gln Gly Trp Ala Leu  
 1205 1210 1215

Thr Arg Gln Gln Leu Gln Ala Leu Leu Leu Lys Arg Phe Leu Leu Ala  
 1220 1225 1230

Arg Arg Ser Arg Arg Gly Leu Phe Ala Gln Ile Val Leu Pro Ala Leu  
 1235 1240 1245

Phe Val Gly Leu Ala Leu Val Phe Ser Leu Ile Val Pro Pro Phe Gly  
 1250 1255 1260

His Tyr Pro Ala Leu Arg Leu Ser Pro Thr Met Tyr Gly Ala Gln Val  
 1265 1270 1275 1280

Ser Phe Phe Ser Glu Asp Ala Pro Gly Asp Pro Gly Arg Ala Arg Leu  
 1285 1290 1295

Leu Glu Ala Leu Leu Gln Glu Ala Gly Leu Glu Glu Pro Pro Val Gln  
 1300 1305 1310

His Ser Ser His Arg Phe Ser Ala Pro Glu Val Pro Ala Glu Val Ala  
1315 1320 1325

Lys Val Leu Ala Ser Gly Asn Trp Thr Pro Glu Ser Pro Ser Pro Ala  
1330 1335 1340

Cys Gln Cys Ser Gln Pro Gly Ala Arg Arg Leu Leu Pro Asp Cys Pro  
1345 1350 1355 1360

Ala Ala Ala Gly Gly Pro Pro Pro Pro Gln Ala Val Thr Gly Ser Gly  
1365 1370 1375

Glu Val Val Gln Asn Leu Thr Gly Arg Asn Leu Ser Asp Phe Leu Val  
1380 1385 1390

Lys Thr Tyr Pro Arg Leu Val Arg Gln Gly Leu Lys Thr Lys Lys Trp  
1395 1400 1405

Val Asn Glu Val Arg Tyr Gly Gly Phe Ser Leu Gly Gly Arg Asp Pro  
1410 1415 1420

Gly Leu Pro Ser Gly Gln Glu Leu Gly Arg Ser Val Glu Glu Leu Trp  
1425 1430 1435 1440

Ala Leu Leu Ser Pro Leu Pro Gly Gly Ala Leu Asp Arg Val Leu Lys  
1445 1450 1455

Asn Leu Thr Ala Trp Ala His Ser Leu Asp Ala Gln Asp Ser Leu Lys  
1460 1465 1470

Ile Trp Phe Asn Asn Lys Gly Trp His Ser Met Val Ala Phe Val Asn  
1475 1480 1485

Arg Ala Ser Asn Ala Ile Leu Arg Ala His Leu Pro Pro Gly Pro Ala  
1490 1495 1500

Arg His Ala His Ser Ile Thr Thr Leu Asn His Pro Leu Asn Leu Thr  
1505 1510 1515 1520

Lys Glu Gln Leu Ser Glu Ala Ala Leu Met Ala Ser Ser Val Asp Val  
1525 1530 1535

Leu Val Ser Ile Cys Val Val Phe Ala Met Ser Phe Val Pro Ala Ser  
1540 1545 1550

Phe Thr Leu Val Leu Ile Glu Glu Arg Val Thr Arg Ala Lys His Leu  
1555 1560 1565

Gln Leu Met Gly Gly Leu Ser Pro Thr Leu Tyr Trp Leu Gly Asn Phe  
1570 1575 1580

Leu Trp Asp Met Cys Asn Tyr Leu Val Pro Ala Cys Ile Val Val Leu  
1585 1590 1595 1600

Ile Phe Leu Ala Phe Gln Gln Arg Ala Tyr Val Ala Pro Ala Asn Leu  
1605 1610 1615



Pro Ala Leu Leu Leu Leu Leu Leu Leu Tyr Gly Trp Ser Ile Thr Pro  
1620 1625 1630

Leu Met Tyr Pro Ala Ser Phe Phe Phe Ser Val Pro Ser Thr Ala Tyr  
1635 1640 1645

Val Val Leu Thr Cys Ile Asn Leu Phe Ile Gly Ile Asn Gly Ser Met  
1650 1655 1660

Ala Thr Phe Val Leu Glu Leu Phe Ser Asp Gln Lys Leu Gln Glu Val  
1665 1670 1675 1680

Ser Arg Ile Leu Lys Gln Val Phe Leu Ile Phe Pro His Phe Cys Leu  
1685 1690 1695

Gly Arg Gly Leu Ile Asp Met Val Arg Asn Gln Ala Met Ala Asp Ala  
1700 1705 1710

Phe Glu Arg Leu Gly Asp Arg Gln Phe Gln Ser Pro Leu Arg Trp Glu  
1715 1720 1725

Val Val Gly Lys Asn Leu Leu Ala Met Val Ile Gln Gly Pro Leu Phe  
1730 1735 1740

Leu Leu Phe Thr Leu Leu Leu Gln His Arg Ser Gln Leu Leu Pro Gln  
1745 1750 1755 1760

Pro Arg Val Arg Ser Leu Pro Leu Leu Gly Glu Glu Asp Glu Asp Val  
1765 1770 1775

Ala Arg Glu Arg Glu Arg Val Val Gln Gly Ala Thr Gln Gly Asp Val  
1780 1785 1790

Leu Val Leu Arg Asn Leu Thr Lys Val Tyr Arg Gly Gln Arg Met Pro  
1795 1800 1805

Ala Val Asp Arg Leu Cys Leu Gly Ile Pro Pro Gly Glu Cys Phe Gly  
1810 1815 1820

Leu Leu Gly Val Asn Gly Ala Gly Lys Thr Ser Thr Phe Arg Met Val  
1825 1830 1835 1840

Thr Gly Asp Thr Leu Ala Ser Arg Gly Glu Ala Val Leu Ala Gly His  
1845 1850 1855

Ser Val Ala Arg Glu Pro Ser Ala Ala His Leu Ser Met Gly Tyr Cys  
1860 1865 1870

Pro Gln Ser Asp Ala Ile Phe Glu Leu Leu Thr Gly Arg Glu His Leu  
1875 1880 1885

Glu Leu Leu Ala Arg Leu Arg Gly Val Pro Glu Ala Gln Val Ala Gln  
1890 1895 1900

Thr Ala Gly Ser Gly Leu Ala Arg Leu Gly Leu Ser Trp Tyr Ala Asp  
1905 1910 1915 1920

Arg Pro Ala Gly Thr Tyr Ser Gly Gly Asn Lys Arg Lys Leu Ala Thr  
 1925 1930 1935

Ala Leu Ala Leu Val Gly Asp Pro Ala Val Val Phe Leu Asp Glu Pro  
 1940 1945 1950

Thr Thr Gly Met Asp Pro Ser Ala Arg Arg Phe Leu Trp Asn Ser Leu  
 1955 1960 1965

Leu Ala Val Val Arg Glu Gly Arg Ser Val Met Leu Thr Ser His Ser  
 1970 1975 1980

Met Glu Glu Cys Glu Ala Leu Cys Ser Arg Leu Ala Ile Met Val Asn  
 1985 1990 1995 2000

Gly Arg Phe Arg Cys Leu Gly Ser Pro Gln His Leu Lys Gly Arg Phe  
 2005 2010 2015

Ala Ala Gly His Thr Leu Thr Leu Arg Val Pro Ala Ala Arg Ser Gln  
 2020 2025 2030

Pro Ala Ala Ala Phe Val Ala Ala Glu Phe Pro Gly Ser Glu Leu Arg  
 2035 2040 2045

Glu Ala His Gly Gly Arg Leu Arg Phe Gln Leu Pro Pro Gly Gly Arg  
 2050 2055 2060

Cys Ala Leu Ala Arg Val Phe Gly Glu Leu Ala Val His Gly Ala Glu  
 2065 2070 2075 2080

His Gly Val Glu Asp Phe Ser Val Ser Gln Thr Met Leu Glu Glu Val  
 2085 2090 2095

Phe Leu Tyr Phe Ser Lys Asp Gln Gly Lys Asp Glu Asp Thr Glu Glu  
 2100 2105 2110

Gln Lys Glu Ala Gly Val Gly Val Asp Pro Ala Pro Gly Leu Gln His  
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Pro Lys Arg Val Ser Gln Phe Leu Asp Asp Pro Ser Thr Ala Glu Thr  
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Val Leu  
 2145

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 <212> PRT  
 <213> Homo sapiens

<400> 6  
 Pro Pro Leu Glu His His Glu Cys His Phe Pro Asn Lys Pro Leu Pro  
 1 5 10 15

Ser Ala Gly Thr Val Pro Trp Leu Gln Gly Leu Ile Cys Asn Val Asn  
 20 25 30



Gly Tyr Ser Trp Gln Asp Ala His Ala Asp Val Gly His Leu Val Gly  
 340 345 350  
 Thr Leu Gly Arg Val Thr Glu Cys Leu Ser Leu Asp Lys Leu Glu Ala  
 355 360 365  
 Ala Pro Ser Glu Ala Ala Leu Val Ser Arg Ala Leu Gln Leu Leu Ala  
 370 375 380  
 Glu His Arg Phe Trp Ala Gly Val Val Phe Leu Gly Pro Glu Asp Ser  
 385 390 395 400  
 Ser Asp Pro Thr Glu His Pro Thr Pro Asp Leu Gly Pro Gly His Val  
 405 410 415  
 Arg Ile Lys Ile Arg Met Asp Ile Asp Val Val Thr Arg Thr Asn Lys  
 420 425 430  
 Ile Arg Asp Arg Phe Trp Asp Pro Gly Pro Ala Ala Asp Pro Leu Thr  
 435 440 445  
 Asp Leu Arg Tyr Val Trp Gly Gly Phe Val Tyr Leu Gln Asp Leu Val  
 450 455 460  
 Glu Arg Ala Ala Val Arg Val Leu Ser Gly Ala Asn Pro Arg Ala Gly  
 465 470 475 480  
 Leu Tyr Leu Gln Gln Met Pro Tyr Pro Cys Tyr Val Asp Asp Val Phe  
 485 490 495  
 Leu Arg Val Leu Ser Arg Ser Leu Pro Leu Phe Leu Thr Leu Ala Trp  
 500 505 510  
 Ile Tyr Ser Val Thr Leu Thr Val Lys Ala Val Val Arg Glu Lys Glu  
 515 520 525  
 Thr Arg Leu Arg Asp Thr Met Arg Ala Met Gly Leu Ser Arg Ala Val  
 530 535 540  
 Leu Trp Leu Gly Trp Phe Leu Ser Cys Leu Gly Pro Phe Leu Leu Ser  
 545 550 555 560  
 Ala Ala Leu Leu Val Leu Val Leu Lys Leu Gly Asp Ile Leu Pro Tyr  
 565 570 575  
 Ser His Pro Gly Val Val Phe Leu Phe Leu Ala Ala Phe Ala Val Ala  
 580 585 590  
 Thr Val Thr Gln Ser Phe Leu Leu Ser Ala Phe Phe Ser Arg Ala Asn  
 595 600 605  
 Leu Ala Ala Ala Cys Gly Gly Leu Ala Tyr Phe Ser Leu Tyr Leu Pro  
 610 615 620  
 Tyr Val Leu Cys Val Ala Trp Arg Asp Arg Leu Pro Ala Gly Gly Arg  
 625 630 635 640

Val Ala Ala Ser Leu Leu Ser Pro Val Ala Phe Gly Phe Gly Cys Glu  
 645 650 655  
 Ser Leu Ala Leu Leu Glu Glu Gln Gly Glu Gly Ala Gln Trp His Asn  
 660 665 670  
 Val Gly Thr Arg Pro Thr Ala Asp Val Phe Ser Leu Ala Gln Val Ser  
 675 680 685  
 Gly Leu Leu Leu Leu Asp Ala Ala Leu Tyr Gly Leu Ala Thr Trp Tyr  
 690 695 700  
 Leu Glu Ala Val Cys Pro Gly Gln Tyr Gly Ile Pro Glu Pro Trp Asn  
 705 710 715 720  
 Phe Pro Phe Arg Arg Ser Tyr Trp Cys Gly Pro Arg Pro Pro Lys Ser  
 725 730 735  
 Pro Ala Pro Cys Pro Thr Pro Leu Asp Pro Lys Val Leu Val Glu Glu  
 740 745 750  
 Ala Pro Pro Gly Leu Ser Pro Gly Val Ser Val Arg Ser Leu Glu Lys  
 755 760 765  
 Arg Phe Pro Gly Ser Pro Gln Pro Ala Leu Arg Gly Leu Ser Leu Asp  
 770 775 780  
 Phe Tyr Gln Gly His Ile Thr Ala Phe Leu Gly His Asn Gly Ala Gly  
 785 790 795 800  
 Lys Thr Thr Thr Leu Ser Ile Leu Ser Gly Leu Phe Pro Pro Ser Gly  
 805 810 815  
 Gly Ser Ala Phe Ile Leu Gly His Asp Val Arg Ser Ser Met Ala Ala  
 820 825 830  
 Ile Arg Pro His Leu Gly Val Cys Pro Gln Tyr Asn Val Leu Phe Asp  
 835 840 845  
 Met Leu Thr Val Asp Glu His Val Trp Phe Tyr Gly Arg Leu Lys Gly  
 850 855 860  
 Leu Ser Ala Ala Val Val Gly Pro Glu Gln Asp Arg Leu Leu Gln Asp  
 865 870 875 880  
 Val Gly Leu Val Ser Lys Gln Ser Val Gln Thr Arg His Leu Ser Gly  
 885 890 895  
 Gly Met Gln Arg Lys Leu Ser Val Ala Ile Ala Phe Val Gly Gly Ser  
 900 905 910  
 Gln Val Val Ile Leu Asp Glu Pro Thr Ala Gly Val Asp Pro Ala Ser  
 915 920 925  
 Arg Arg Gly Ile Trp Glu Leu Leu Leu Lys Tyr Arg Glu Gly Arg Thr  
 930 935 940

Leu Ile Leu Ser Thr His His Leu Asp Glu Ala Glu Leu Leu Gly Asp  
945 950 955 960

Arg Val Ala Val Val Ala Gly Gly Arg Leu Cys Cys Cys Gly Ser Pro  
965 970 975

Leu Phe Leu Arg Arg His Leu Gly Ser Gly Tyr Tyr Leu Thr Leu Val  
980 985 990

Lys Ala Arg Leu Pro Leu Thr Thr Asn Glu Lys Ala Asp Thr Asp Met  
995 1000 1005

Glu Gly Ser Val Asp Thr Arg Gln Glu Lys Lys Asn Gly Ser Gln Gly  
1010 1015 1020

Ser Arg Val Gly Thr Pro Gln Leu Leu Ala Leu Val Gln His Trp Val  
1025 1030 1035 1040

Pro Gly Ala Arg Leu Val Glu Glu Leu Pro His Glu Leu Val Leu Val  
1045 1050 1055

Leu Pro Tyr Thr Gly Ala His Asp Gly Ser Phe Ala Thr Leu Phe Arg  
1060 1065 1070

Glu Leu Asp Thr Arg Leu Ala Glu Leu Arg Leu Thr Gly Tyr Gly Ile  
1075 1080 1085

Ser Asp Thr Ser Leu Glu Glu Ile Phe Leu Lys Val Val Glu Glu Cys  
1090 1095 1100

Ala Ala Asp Thr Asp Met Glu Asp Gly Ser Cys Gly Gln His Leu Cys  
1105 1110 1115 1120

Thr Gly Ile Ala Gly Leu Asp Val Thr Leu Arg Leu Lys Met Pro Pro  
1125 1130 1135

Gln Glu Thr Ala Leu Glu Asn Gly Glu Pro Ala Gly Ser Ala Pro Glu  
1140 1145 1150

Thr Asp Gln Gly Ser Gly Pro Asp Ala Val Gly Arg Val Gln Gly Trp  
1155 1160 1165

Ala Leu Thr Arg Gln Gln Leu Gln Ala Leu Leu Leu Lys Arg Phe Leu  
1170 1175 1180

Leu Ala Arg Arg Ser Arg Arg Gly Leu Phe Ala Gln Ile Val Leu Pro  
1185 1190 1195 1200

Ala Leu Phe Val Gly Leu Ala Leu Val Phe Ser Leu Ile Val Pro Pro  
1205 1210 1215

Phe Gly His Tyr Pro Ala Leu Arg Leu Ser Pro Thr Met Tyr Gly Ala  
1220 1225 1230

Gln Val Ser Phe Phe Ser Glu Asp Ala Pro Gly Asp Pro Gly Arg Ala  
1235 1240 1245

Arg	Leu	Leu	Glu	Ala	Leu	Leu	Gln	Glu	Ala	Gly	Leu	Glu	Glu	Pro	Pro	
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Val	Gln	His	Ser	Ser	His	Arg	Phe	Ser	Ala	Pro	Glu	Val	Pro	Ala	Glu	
1265						1270				1275					1280	
Val	Ala	Lys	Val	Leu	Ala	Ser	Gly	Asn	Trp	Thr	Pro	Glu	Ser	Pro	Ser	
				1285				1290						1295		
Pro	Ala	Cys	Gln	Cys	Ser	Gln	Pro	Gly	Ala	Arg	Arg	Leu	Leu	Pro	Asp	
		1300					1305						1310			
Cys	Pro	Ala	Ala	Ala	Gly	Gly	Pro	Pro	Pro	Pro	Gln	Ala	Val	Thr	Gly	
	1315						1320					1325				
Ser	Gly	Glu	Val	Val	Gln	Asn	Leu	Thr	Gly	Arg	Asn	Leu	Ser	Asp	Phe	
1330						1335					1340					
Leu	Val	Lys	Thr	Tyr	Pro	Arg	Leu	Val	Arg	Gln	Gly	Leu	Lys	Thr	Lys	
1345					1350					1355					1360	
Lys	Trp	Val	Asn	Glu	Val	Arg	Tyr	Gly	Gly	Phe	Ser	Leu	Gly	Gly	Arg	
			1365						1370					1375		
Asp	Pro	Gly	Leu	Pro	Ser	Gly	Gln	Glu	Leu	Gly	Arg	Ser	Val	Glu	Glu	
		1380					1385						1390			
Leu	Trp	Ala	Leu	Leu	Ser	Pro	Leu	Pro	Gly	Gly	Ala	Leu	Asp	Arg	Val	
	1395						1400					1405				
Leu	Lys	Asn	Leu	Thr	Ala	Trp	Ala	His	Ser	Leu	Asp	Ala	Gln	Asp	Ser	
1410						1415					1420					
Leu	Lys	Ile	Trp	Phe	Asn	Asn	Lys	Gly	Trp	His	Ser	Met	Val	Ala	Phe	
1425					1430					1435					1440	
Val	Asn	Arg	Ala	Ser	Asn	Ala	Ile	Leu	Arg	Ala	His	Leu	Pro	Pro	Gly	
			1445					1450						1455		
Pro	Ala	Arg	His	Ala	His	Ser	Ile	Thr	Thr	Leu	Asn	His	Pro	Leu	Asn	
		1460						1465					1470			
Leu	Thr	Lys	Glu	Gln	Leu	Ser	Glu	Ala	Ala	Leu	Met	Ala	Ser	Ser	Val	
	1475						1480					1485				
Asp	Val	Leu	Val	Ser	Ile	Cys	Val	Val	Phe	Ala	Met	Ser	Phe	Val	Pro	
1490					1495						1500					
Ala	Ser	Phe	Thr	Leu	Val	Leu	Ile	Glu	Glu	Arg	Val	Thr	Arg	Ala	Lys	
1505					1510					1515					1520	
His	Leu	Gln	Leu	Met	Gly	Gly	Leu	Ser	Pro	Thr	Leu	Tyr	Trp	Leu	Gly	
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Asn	Phe	Leu	Trp	Asp	Met	Cys	Asn	Tyr	Leu	Val	Pro	Ala	Cys	Ile	Val	
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Val Leu Ile Phe Leu Ala Phe Gln Gln Arg Ala Tyr Val Ala Pro Ala  
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Asn Leu Pro Ala Leu Leu Leu Leu Leu Leu Tyr Gly Trp Ser Ile  
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Thr Pro Leu Met Tyr Pro Ala Ser Phe Phe Phe Ser Val Pro Ser Thr  
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Ala Tyr Val Val Leu Thr Cys Ile Asn Leu Phe Ile Gly Ile Asn Gly  
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Ser Met Ala Thr Phe Val Leu Glu Leu Phe Ser Asp Gln Lys Leu Gln  
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Glu Val Ser Arg Ile Leu Lys Gln Val Phe Leu Ile Phe Pro His Phe  
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Cys Leu Gly Arg Gly Leu Ile Asp Met Val Arg Asn Gln Ala Met Ala  
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Asp Ala Phe Glu Arg Leu Gly Asp Arg Gln Phe Gln Ser Pro Leu Arg  
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Trp Glu Val Val Gly Lys Asn Leu Leu Ala Met Val Ile Gln Gly Pro  
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Leu Phe Leu Leu Phe Thr Leu Leu Leu Gln His Arg Ser Gln Leu Leu  
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Pro Gln Pro Arg Val Arg Ser Leu Pro Leu Leu Gly Glu Glu Asp Glu  
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Asp Val Ala Arg Glu Arg Glu Arg Val Val Gln Gly Ala Thr Gln Gly  
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Asp Val Leu Val Leu Arg Asn Leu Thr Lys Val Tyr Arg Gly Gln Arg  
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Met Pro Ala Val Asp Arg Leu Cys Leu Gly Ile Pro Pro Gly Glu Cys  
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Phe Gly Leu Leu Gly Val Asn Gly Ala Gly Lys Thr Ser Thr Phe Arg  
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Met Val Thr Gly Asp Thr Leu Ala Ser Arg Gly Glu Ala Val Leu Ala  
1795 1800 1805

Gly His Ser Val Ala Arg Glu Pro Ser Ala Ala His Leu Ser Met Gly  
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Tyr Cys Pro Gln Ser Asp Ala Ile Phe Glu Leu Leu Thr Gly Arg Glu  
1825 1830 1835 1840

His Leu Glu Leu Leu Ala Arg Leu Arg Gly Val Pro Glu Ala Gln Val  
1845 1850 1855



Ala Gln Thr Ala Gly Ser Gly Leu Ala Arg Leu Gly Leu Ser Trp Tyr  
1860 1865 1870

Ala Asp Arg Pro Ala Gly Thr Tyr Ser Gly Gly Asn Lys Arg Lys Leu  
1875 1880 1885

Ala Thr Ala Leu Ala Leu Val Gly Asp Pro Ala Val Val Phe Leu Asp  
1890 1895 1900

Glu Pro Thr Thr Gly Met Asp Pro Ser Ala Arg Arg Phe Leu Trp Asn  
1905 1910 1915 1920

Ser Leu Leu Ala Val Val Arg Glu Gly Arg Ser Val Met Leu Thr Ser  
1925 1930 1935

His Ser Met Glu Glu Cys Glu Ala Leu Cys Ser Arg Leu Ala Ile Met  
1940 1945 1950

Val Asn Gly Arg Phe Arg Cys Leu Gly Ser Pro Gln His Leu Lys Gly  
1955 1960 1965

Arg Phe Ala Ala Gly His Thr Leu Thr Leu Arg Val Pro Ala Ala Arg  
1970 1975 1980

Ser Gln Pro Ala Ala Ala Phe Val Ala Ala Glu Phe Pro Gly Ser Glu  
1985 1990 1995 2000

Leu Arg Glu Ala His Gly Gly Arg Leu Arg Phe Gln Leu Pro Pro Gly  
2005 2010 2015

Gly Arg Cys Ala Leu Ala Arg Val Phe Gly Glu Leu Ala Val His Gly  
2020 2025 2030

Ala Glu His Gly Val Glu Asp Phe Ser Val Ser Gln Thr Met Leu Glu  
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Glu Val Phe Leu Tyr Phe Ser Lys Asp Gln Gly Lys Asp Glu Asp Thr  
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Glu Thr Val Leu  
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Met Val Cys Leu Gly Thr Gly Gln Ser Ala Gly Pro Leu Val Ser Val	
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caa aat cat tgt ccc cct tgt ggt ctt tct ccc cag gaa tcc ctg ggg	96
Gln Asn His Cys Pro Pro Cys Gly Leu Ser Pro Gln Glu Ser Leu Gly	
20 25 30	
ttg gca ctg ggc caa gcc cag gag ccc ttg cac agc ttg ttg gag gcc	144
Leu Ala Leu Gly Gln Ala Gln Glu Pro Leu His Ser Leu Leu Glu Ala	
35 40 45	
gct ggg gac ctg gcc cag gag ctc ctg gcg ctg cgc agc ctg gtg gag	192
Ala Gly Asp Leu Ala Gln Glu Leu Leu Ala Leu Arg Ser Leu Val Glu	
50 55 60	
ctt cgg gca ctg ctg cag aga ccc cga ggg acc agc ggc ccc ctg gag	240
Leu Arg Ala Leu Leu Gln Arg Pro Arg Gly Thr Ser Gly Pro Leu Glu	
65 70 75 80	
ttg ctg tca gag gcc ctc tgc agt gtc agg gga cct agc agc aca gtg	288
Leu Leu Ser Glu Ala Leu Cys Ser Val Arg Gly Pro Ser Ser Thr Val	
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ggc ccc tcc ctc aac tgg tac gag gct agt gac ctg atg gag ctg gtg	336
Gly Pro Ser Leu Asn Trp Tyr Glu Ala Ser Asp Leu Met Glu Leu Val	
100 105 110	
ggg cag gag cca gaa tcc gcc ctg cca gac agc agc ctg agc ccc gcc	384
Gly Gln Glu Pro Glu Ser Ala Leu Pro Asp Ser Ser Leu Ser Pro Ala	
115 120 125	
tgc tcg gag ctg att gga gcc ctg gac agc cac ccg ctg tcc cgc ctg	432
Cys Ser Glu Leu Ile Gly Ala Leu Asp Ser His Pro Leu Ser Arg Leu	
130 135 140	
ctc tgg aga cgc ctg aag cct ctg atc ctc ggg aag cta ctc ttt gca	480
Leu Trp Arg Arg Leu Lys Pro Leu Ile Leu Gly Lys Leu Leu Phe Ala	
145 150 155 160	
cca gat aca cct ttt acc cgg aag ctc atg gcc cag gtg aac cgg acc	528
Pro Asp Thr Pro Phe Thr Arg Lys Leu Met Ala Gln Val Asn Arg Thr	
165 170 175	
ttc gag gag ctc acc ctg ctg agg gat gtc cgg gag gtg tgg gag atg	576
Phe Glu Glu Leu Thr Leu Leu Arg Asp Val Arg Glu Val Trp Glu Met	
180 185 190	
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Leu Gly Pro Arg Ile Phe Thr Phe Met Asn Asp Ser Ser Asn Val Ala	
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Met Leu Gln Arg Leu Leu Gln Met Gln Asp Glu Gly Arg Arg Gln Pro	

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Arg Pro Gly Gly Arg Asp His Met Glu Ala Leu Arg Ser Phe Leu Asp			
225	230	235	240
cct ggg agc ggt ggc tac agc tgg cag gac gca cac gct gat gtg ggg			768
Pro Gly Ser Gly Gly Tyr Ser Trp Gln Asp Ala His Ala Asp Val Gly			
	245	250	255
cac ctg gtg ggc acg ctg ggc cga gtg acg gag tgc ctg tcc ttg gac			816
His Leu Val Gly Thr Leu Gly Arg Val Thr Glu Cys Leu Ser Leu Asp			
	260	265	270
aag ctg gag gcg gca ccc tca gag gca gcc ctg gtg tcg cgg gcc ctg			864
Lys Leu Glu Ala Ala Pro Ser Glu Ala Ala Leu Val Ser Arg Ala Leu			
	275	280	285
caa ctg ctc gcg gaa cat cga ttc tgg gcc ggc gtc gtc ttc ttg gga			912
Gln Leu Leu Ala Glu His Arg Phe Trp Ala Gly Val Val Phe Leu Gly			
	290	295	300
cct gag gac tct tca gac ccc aca gag cac cca acc cca gac ctg ggc			960
Pro Glu Asp Ser Ser Asp Pro Thr Glu His Pro Thr Pro Asp Leu Gly			
305	310	315	320
ccc ggc cac gtg cgc atc aaa atc cgc atg gac att gac gtg gtc acg			1008
Pro Gly His Val Arg Ile Lys Ile Arg Met Asp Ile Asp Val Val Thr			
	325	330	335
agg acc aat aag atc agg gac agg ttt tgg gac cct ggc cca gcc gcg			1056
Arg Thr Asn Lys Ile Arg Asp Arg Phe Trp Asp Pro Gly Pro Ala Ala			
	340	345	350
gac ccc ctg acc gac ctg cgc tac gtg tgg ggc ggc ttc gtg tac ctg			1104
Asp Pro Leu Thr Asp Leu Arg Tyr Val Trp Gly Gly Phe Val Tyr Leu			
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Gln Asp Leu Val Glu Arg Ala Ala Val Arg Val Leu Ser Gly Ala Asn			
	370	375	380
ccc cgg gcc ggc ctc tac ctg cag cag atg ccc tat ccg tgc tat gtg			1200
Pro Arg Ala Gly Leu Tyr Leu Gln Gln Met Pro Tyr Pro Cys Tyr Val			
385	390	395	400
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Asp Asp Val Phe Leu Arg Val Leu Ser Arg Ser Leu Pro Leu Phe Leu			
	405	410	415
acg ctg gcc tgg atc tac tcc gtg aca ctg aca gtg aag gcc gtg gtg			1296
Thr Leu Ala Trp Ile Tyr Ser Val Thr Leu Thr Val Lys Ala Val Val			
	420	425	430
cgg gag aag gag acg cgg ctg cgg gac acc atg cgc gcc atg ggg ctc			1344
Arg Glu Lys Glu Thr Arg Leu Arg Asp Thr Met Arg Ala Met Gly Leu			
	435	440	445



agc ctg gag aag cgc ttt cct gga agc ccg cag cca gcc ctg cgg ggg	2064
Ser Leu Glu Lys Arg Phe Pro Gly Ser Pro Gln Pro Ala Leu Arg Gly	
675 680 685	
ctc agc ctg gac ttc tac cag ggc cac atc acc gcc ttc ctg ggc cac	2112
Leu Ser Leu Asp Phe Tyr Gln Gly His Ile Thr Ala Phe Leu Gly His	
690 695 700	
aac ggg gcc ggc aag acc acc acc ctg tcc atc ttg agt ggc ctc ttc	2160
Asn Gly Ala Gly Lys Thr Thr Thr Leu Ser Ile Leu Ser Gly Leu Phe	
705 710 715 720	
cca ccc agt ggt ggc tct gcc ttc atc ctg ggc cac gac gtc cgc tcc	2208
Pro Pro Ser Gly Gly Ser Ala Phe Ile Leu Gly His Asp Val Arg Ser	
725 730 735	
agc atg gcc gcc atc cgg ccc cac ctg ggc gtc tgt cct cag tac aac	2256
Ser Met Ala Ala Ile Arg Pro His Leu Gly Val Cys Pro Gln Tyr Asn	
740 745 750	
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Val Leu Phe Asp Met Leu Thr Val Asp Glu His Val Trp Phe Tyr Gly	
755 760 765	
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Arg Leu Lys Gly Leu Ser Ala Ala Val Val Gly Pro Glu Gln Asp Arg	
770 775 780	
ctg ctg cag gat gtg ggg ctg gtc tcc aag cag agt gtg cag act cgc	2400
Leu Leu Gln Asp Val Gly Leu Val Ser Lys Gln Ser Val Gln Thr Arg	
785 790 795 800	
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His Leu Ser Gly Gly Met Gln Arg Lys Leu Ser Val Ala Ile Ala Phe	
805 810 815	
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Val Gly Gly Ser Gln Val Val Ile Leu Asp Glu Pro Thr Ala Gly Val	
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gat cct gct tcc cgc cgc ggt att tgg gag ctg ctg ctc aaa tac cga	2544
Asp Pro Ala Ser Arg Arg Gly Ile Trp Glu Leu Leu Leu Lys Tyr Arg	
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gaa ggt cgc acg ctg atc ctc tcc acc cac cac ctg gat gag gca gag	2592
Glu Gly Arg Thr Leu Ile Leu Ser Thr His His Leu Asp Glu Ala Glu	
850 855 860	
ctg ctg gga gac cgt gtg gct gtg gtg gca ggt ggc cgc ttg tgc tgc	2640
Leu Leu Gly Asp Arg Val Ala Val Val Ala Gly Gly Arg Leu Cys Cys	
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Cys Gly Ser Pro Leu Phe Leu Arg Arg His Leu Gly Ser Gly Tyr Tyr	
885 890 895	
ctg acg ctg gtg aag gcc cgc ctg ccc ctg acc acc aat gag aag gct	2736

Leu Thr Leu Val Lys Ala Arg Leu Pro Leu Thr Thr Asn Glu Lys Ala	
900 905 910	
gac act gac atg gag ggc agt gtg gac acc agg cag gaa aag aag aat	2784
Asp Thr Asp Met Glu Gly Ser Val Asp Thr Arg Gln Glu Lys Lys Asn	
915 920 925	
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Gly Ser Gln Gly Ser Arg Val Gly Thr Pro Gln Leu Leu Ala Leu Val	
930 935 940	
cag cac tgg gtg ccc ggg gca cgg ctg gtg gag gag ctg cca cac gag	2880
Gln His Trp Val Pro Gly Ala Arg Leu Val Glu Glu Leu Pro His Glu	
945 950 955 960	
ctg gtg ctg gtg ctg ccc tac acg ggt gcc cat gac ggc agc ttc gcc	2928
Leu Val Leu Val Leu Pro Tyr Thr Gly Ala His Asp Gly Ser Phe Ala	
965 970 975	
aca ctc ttc cga gag cta gac acg cgg ctg gcg gag ctg agg ctc act	2976
Thr Leu Phe Arg Glu Leu Asp Thr Arg Leu Ala Glu Leu Arg Leu Thr	
980 985 990	
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Gly Tyr Gly Ile Ser Asp Thr Ser Leu Glu Glu Ile Phe Leu Lys Val	
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Val Glu Glu Cys Ala Ala Asp Thr Asp Met Glu Asp Gly Ser Cys Gly	
1010 1015 1020	
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Gln His Leu Cys Thr Gly Ile Ala Gly Leu Asp Val Thr Leu Arg Leu	
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Lys Met Pro Pro Gln Glu Thr Ala Leu Glu Asn Gly Glu Pro Ala Gly	
1045 1050 1055	
tca gcc cca gag act gac cag ggc tct ggg cca gac gcc gtg ggc cgg	3216
Ser Ala Pro Glu Thr Asp Gln Gly Ser Gly Pro Asp Ala Val Gly Arg	
1060 1065 1070	
gta cag ggc tgg gca ctg acc cgc cag cag ctc cag gcc ctg ctt ctc	3264
Val Gln Gly Trp Ala Leu Thr Arg Gln Gln Leu Gln Ala Leu Leu Leu	
1075 1080 1085	
aag cgc ttt ctg ctt gcc cgc cgc agc cgc cgc ggc ctg ttc gcc cag	3312
Lys Arg Phe Leu Leu Ala Arg Arg Ser Arg Arg Gly Leu Phe Ala Gln	
1090 1095 1100	
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Ile Val Leu Pro Ala Leu Phe Val Gly Leu Ala Leu Val Phe Ser Leu	
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atc gtg cct cct ttc ggg cac tac ccg gct ctg cgg ctc agt ccc acc	3408
Ile Val Pro Pro Phe Gly His Tyr Pro Ala Leu Arg Leu Ser Pro Thr	

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Met Tyr Gly Ala Gln Val Ser Phe Phe Ser Glu Asp Ala Pro Gly Asp			
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cct gga cgt gcc cgg ctg ctc gag gcg ctg ctg cag gag gca gga ctg			3504
Pro Gly Arg Ala Arg Leu Leu Glu Ala Leu Leu Gln Glu Ala Gly Leu			
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gag gag ccc cca gtg cag cat agc tcc cac agg ttc tcg gca cca gaa			3552
Glu Glu Pro Pro Val Gln His Ser Ser His Arg Phe Ser Ala Pro Glu			
1170	1175	1180	
gtt cct gct gaa gtg gcc aag gtc ttg gcc agt ggc aac tgg acc cca			3600
Val Pro Ala Glu Val Ala Lys Val Leu Ala Ser Gly Asn Trp Thr Pro			
1185	1190	1195	1200
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Glu Ser Pro Ser Pro Ala Cys Gln Cys Ser Gln Pro Gly Ala Arg Arg			
1205	1210	1215	
ctg ctg ccc gac tgc ccg gct gca gct ggt ggt ccc cct ccg ccc cag			3696
Leu Leu Pro Asp Cys Pro Ala Ala Ala Gly Gly Pro Pro Pro Pro Gln			
1220	1225	1230	
gca gtg acc ggc tct ggg gaa gtg gtt cag aac ctg aca ggc cgg aac			3744
Ala Val Thr Gly Ser Gly Glu Val Gln Asn Leu Thr Gly Arg Asn			
1235	1240	1245	
ctg tct gac ttc ctg gtc aag acc tac ccg cgc ctg gtg cgc cag ggc			3792
Leu Ser Asp Phe Leu Val Lys Thr Tyr Pro Arg Leu Val Arg Gln Gly			
1250	1255	1260	
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Leu Lys Thr Lys Lys Trp Val Asn Glu Val Arg Tyr Gly Gly Phe Ser			
1265	1270	1275	1280
ctg ggg ggc cga gac cca ggc ctg ccc tcg ggc caa gag ttg ggc cgc			3888
Leu Gly Gly Arg Asp Pro Gly Leu Pro Ser Gly Gln Glu Leu Gly Arg			
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Ser Val Glu Glu Leu Trp Ala Leu Leu Ser Pro Leu Pro Gly Gly Ala			
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gct cag gac agt ctc aag atc tgg ttc aac aac aaa ggc tgg cac tcc			4032
Ala Gln Asp Ser Leu Lys Ile Trp Phe Asn Asn Lys Gly Trp His Ser			
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atg gtg gcc ttt gtc aac cga gcc agc aac gca atc ctc cgt gct cac			4080
Met Val Ala Phe Val Asn Arg Ala Ser Asn Ala Ile Leu Arg Ala His			
1345	1350	1355	1360





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Gln Asn His Cys Pro Pro Cys Gly Leu Ser Pro Gln Glu Ser Leu Gly	20	25	30
Leu Ala Leu Gly Gln Ala Gln Glu Pro Leu His Ser Leu Leu Glu Ala	35	40	45
Ala Gly Asp Leu Ala Gln Glu Leu Leu Ala Leu Arg Ser Leu Val Glu	50	55	60
Leu Arg Ala Leu Leu Gln Arg Pro Arg Gly Thr Ser Gly Pro Leu Glu	65	70	75
Leu Leu Ser Glu Ala Leu Cys Ser Val Arg Gly Pro Ser Ser Thr Val	85	90	95
Gly Pro Ser Leu Asn Trp Tyr Glu Ala Ser Asp Leu Met Glu Leu Val	100	105	110
Gly Gln Glu Pro Glu Ser Ala Leu Pro Asp Ser Ser Leu Ser Pro Ala	115	120	125
Cys Ser Glu Leu Ile Gly Ala Leu Asp Ser His Pro Leu Ser Arg Leu	130	135	140
Leu Trp Arg Arg Leu Lys Pro Leu Ile Leu Gly Lys Leu Leu Phe Ala	145	150	155
Pro Asp Thr Pro Phe Thr Arg Lys Leu Met Ala Gln Val Asn Arg Thr	165	170	175
Phe Glu Glu Leu Thr Leu Leu Arg Asp Val Arg Glu Val Trp Glu Met	180	185	190
Leu Gly Pro Arg Ile Phe Thr Phe Met Asn Asp Ser Ser Asn Val Ala	195	200	205
Met Leu Gln Arg Leu Leu Gln Met Gln Asp Glu Gly Arg Arg Gln Pro	210	215	220
Arg Pro Gly Gly Arg Asp His Met Glu Ala Leu Arg Ser Phe Leu Asp	225	230	235
Pro Gly Ser Gly Gly Tyr Ser Trp Gln Asp Ala His Ala Asp Val Gly	245	250	255
His Leu Val Gly Thr Leu Gly Arg Val Thr Glu Cys Leu Ser Leu Asp	260	265	270
Lys Leu Glu Ala Ala Pro Ser Glu Ala Ala Leu Val Ser Arg Ala Leu	275	280	285
Gln Leu Leu Ala Glu His Arg Phe Trp Ala Gly Val Val Phe Leu Gly	290	295	300
Pro Glu Asp Ser Ser Asp Pro Thr Glu His Pro Thr Pro Asp Leu Gly			

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 Pro Gly His Val Arg Ile Lys Ile Arg Met Asp Ile Asp Val Val Thr  
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 Arg Thr Asn Lys Ile Arg Asp Arg Phe Trp Asp Pro Gly Pro Ala Ala  
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 Asp Pro Leu Thr Asp Leu Arg Tyr Val Trp Gly Gly Phe Val Tyr Leu  
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 Gln Asp Leu Val Glu Arg Ala Ala Val Arg Val Leu Ser Gly Ala Asn  
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 Pro Arg Ala Gly Leu Tyr Leu Gln Gln Met Pro Tyr Pro Cys Tyr Val  
                                  385                      390                      395                      400  
 Asp Asp Val Phe Leu Arg Val Leu Ser Arg Ser Leu Pro Leu Phe Leu  
                                  405                      410                      415  
 Thr Leu Ala Trp Ile Tyr Ser Val Thr Leu Thr Val Lys Ala Val Val  
                                  420                      425                      430  
 Arg Glu Lys Glu Thr Arg Leu Arg Asp Thr Met Arg Ala Met Gly Leu  
                                  435                      440                      445  
 Ser Arg Ala Val Leu Trp Leu Gly Trp Phe Leu Ser Cys Leu Gly Pro  
                                  450                      455                      460  
 Phe Leu Leu Ser Ala Ala Leu Leu Val Leu Val Leu Lys Leu Gly Asp  
                                  465                      470                      475                      480  
 Ile Leu Pro Tyr Ser His Pro Gly Val Val Phe Leu Phe Leu Ala Ala  
                                  485                      490                      495  
 Phe Ala Val Ala Thr Val Thr Gln Ser Phe Leu Leu Ser Ala Phe Phe  
                                  500                      505                      510  
 Ser Arg Ala Asn Leu Ala Ala Ala Cys Gly Gly Leu Ala Tyr Phe Ser  
                                  515                      520                      525  
 Leu Tyr Leu Pro Tyr Val Leu Cys Val Ala Trp Arg Asp Arg Leu Pro  
                                  530                      535                      540  
 Ala Gly Gly Arg Val Ala Ala Ser Leu Leu Ser Pro Val Ala Phe Gly  
                                  545                      550                      555                      560  
 Phe Gly Cys Glu Ser Leu Ala Leu Leu Glu Glu Gln Gly Glu Gly Ala  
                                  565                      570                      575  
 Gln Trp His Asn Val Gly Thr Arg Pro Thr Ala Asp Val Phe Ser Leu  
                                  580                      585                      590  
 Ala Gln Val Ser Gly Leu Leu Leu Leu Asp Ala Ala Leu Tyr Gly Leu  
                                  595                      600                      605  
 Ala Thr Trp Tyr Leu Glu Ala Val Cys Pro Gly Gln Tyr Gly Ile Pro

Glu Pro Trp Asn Phe Pro Phe Arg Arg Ser Tyr Trp Cys Gly Pro Arg  
 625 630 635 640  
 Pro Pro Lys Ser Pro Ala Pro Cys Pro Thr Pro Leu Asp Pro Lys Val  
 645 650 655  
 Leu Val Glu Glu Ala Pro Pro Gly Leu Ser Pro Gly Val Ser Val Arg  
 660 665 670  
 Ser Leu Glu Lys Arg Phe Pro Gly Ser Pro Gln Pro Ala Leu Arg Gly  
 675 680 685  
 Leu Ser Leu Asp Phe Tyr Gln Gly His Ile Thr Ala Phe Leu Gly His  
 690 695 700  
 Asn Gly Ala Gly Lys Thr Thr Thr Leu Ser Ile Leu Ser Gly Leu Phe  
 705 710 715 720  
 Pro Pro Ser Gly Gly Ser Ala Phe Ile Leu Gly His Asp Val Arg Ser  
 725 730 735  
 Ser Met Ala Ala Ile Arg Pro His Leu Gly Val Cys Pro Gln Tyr Asn  
 740 745 750  
 Val Leu Phe Asp Met Leu Thr Val Asp Glu His Val Trp Phe Tyr Gly  
 755 760 765  
 Arg Leu Lys Gly Leu Ser Ala Ala Val Val Gly Pro Glu Gln Asp Arg  
 770 775 780  
 Leu Leu Gln Asp Val Gly Leu Val Ser Lys Gln Ser Val Gln Thr Arg  
 785 790 795 800  
 His Leu Ser Gly Gly Met Gln Arg Lys Leu Ser Val Ala Ile Ala Phe  
 805 810 815  
 Val Gly Gly Ser Gln Val Val Ile Leu Asp Glu Pro Thr Ala Gly Val  
 820 825 830  
 Asp Pro Ala Ser Arg Arg Gly Ile Trp Glu Leu Leu Leu Lys Tyr Arg  
 835 840 845  
 Glu Gly Arg Thr Leu Ile Leu Ser Thr His His Leu Asp Glu Ala Glu  
 850 855 860  
 Leu Leu Gly Asp Arg Val Ala Val Val Ala Gly Gly Arg Leu Cys Cys  
 865 870 875 880  
 Cys Gly Ser Pro Leu Phe Leu Arg Arg His Leu Gly Ser Gly Tyr Tyr  
 885 890 895  
 Leu Thr Leu Val Lys Ala Arg Leu Pro Leu Thr Thr Asn Glu Lys Ala  
 900 905 910  
 Asp Thr Asp Met Glu Gly Ser Val Asp Thr Arg Gln Glu Lys Lys Asn



1220	1225	1230
Ala Val Thr Gly Ser Gly Glu Val Val Gln Asn Leu Thr Gly Arg Asn 1235 1240 1245		
Leu Ser Asp Phe Leu Val Lys Thr Tyr Pro Arg Leu Val Arg Gln Gly 1250 1255 1260		
Leu Lys Thr Lys Lys Trp Val Asn Glu Val Arg Tyr Gly Gly Phe Ser 1265 1270 1275 1280		
Leu Gly Gly Arg Asp Pro Gly Leu Pro Ser Gly Gln Glu Leu Gly Arg 1285 1290 1295		
Ser Val Glu Glu Leu Trp Ala Leu Leu Ser Pro Leu Pro Gly Gly Ala 1300 1305 1310		
Leu Asp Arg Val Leu Lys Asn Leu Thr Ala Trp Ala His Ser Leu Asp 1315 1320 1325		
Ala Gln Asp Ser Leu Lys Ile Trp Phe Asn Asn Lys Gly Trp His Ser 1330 1335 1340		
Met Val Ala Phe Val Asn Arg Ala Ser Asn Ala Ile Leu Arg Ala His 1345 1350 1355 1360		
Leu Pro Pro Gly Pro Ala Arg His Ala His Ser Ile Thr Thr Leu Asn 1365 1370 1375		
His Pro Leu Asn Leu Thr Lys Glu Gln Leu Ser Glu Ala Ala Leu Met 1380 1385 1390		
Ala Ser Ser Val Asp Val Leu Val Ser Ile Cys Val Val Phe Ala Met 1395 1400 1405		
Ser Phe Val Pro Ala Ser Phe Thr Leu Val Leu Ile Glu Glu Arg Val 1410 1415 1420		
Thr Arg Ala Lys His Leu Gln Leu Met Gly Gly Leu Ser Pro Thr Leu 1425 1430 1435 1440		
Tyr Trp Leu Gly Asn Phe Leu Trp Asp Met Cys Asn Tyr Leu Val Pro 1445 1450 1455		
Ala Cys Ile Val Val Leu Ile Phe Leu Ala Phe Gln Gln Arg Ala Tyr 1460 1465 1470		
Val Ala Pro Ala Asn Leu Pro Ala Leu Leu Leu Leu Leu Leu Tyr 1475 1480 1485		
Gly Arg Gln Ala Val Pro Val Thr Pro Ala Leu Gly Gly Gly Arg Gln 1490 1495 1500		
Glu Pro Leu Gly His Gly Asp Thr Gly Ala Pro Leu Pro Ser Leu His 1505 1510 1515 1520		
Thr Thr Ala Ala Ala Pro Lys Pro Thr Pro Ala Thr Ala Gln Gly Glu		

1525 1530 1535

Val Ser Ala Thr Pro Gly Arg Gly Gly Arg Gly Cys Ser Pro  
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Ala Asn Asn Pro Cys Phe Arg Tyr Pro Thr Pro Gly Glu Ala Pro Gly  
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Val Val Gly Asn Phe Asn Lys Ser Ile Val Ser Arg Leu Phe Ser Asp  
35 40 45

Ala Gln Arg Leu Leu Leu Tyr Ser Gln Arg Asp Thr Ser Ile Lys Asp  
50 55 60

Met His Lys Val Leu Arg Met Leu Arg Gln Ile Lys His Pro Asn Ser  
65 70 75 80

Asn Leu Lys Leu Gln Asp Phe Leu Val Asp Asn Glu Thr Phe Ser Gly  
85 90 95

Phe Leu Gln His Asn Leu Ser Leu Pro Arg Ser Thr Val Asp Ser Leu  
100 105 110

Leu Gln Xaa Asn Val Gly Leu Gln Lys Val Phe Leu Gln Gly Tyr Gln  
115 120 125

Leu His Leu Ala Ser Leu Cys Asn Gly Ser Lys Leu Glu Glu Ile Ile  
130 135 140

Gln Leu Gly Asp Ala Glu Val Ser Ala Leu Cys Gly Leu Pro Arg Lys  
145 150 155 160

Lys Leu Asp Ala Ala Glu Arg Val Leu Arg Tyr Asn Met Asp Ile Leu  
165 170 175

Lys Pro Val Val Thr Lys Leu Asn Ser Thr Ser His Leu Pro Thr Gln  
180 185 190

His Leu Ala Glu Ala Thr Thr Val Leu Leu Asp Ser Leu Gly Gly Leu  
195 200 205

Ala Gln Glu Leu Phe Ser Thr Lys Ser Trp Ser Asp Met Arg Gln Glu









Val Glu Asp Ile Gly His Glu Leu Thr Tyr Val Leu Pro Tyr Glu Ala	1125	1130	1135
1140	1145	1150	
Ala Lys Glu Gly Ala Phe Val Glu Leu Phe His Glu Ile Asp Asp Arg	1155	1160	1165
Leu Ser Asp Leu Gly Ile Ser Ser Tyr Gly Ile Ser Glu Thr Thr Leu	1170	1175	1180
Glu Glu Ile Phe Leu Lys Val Ala Glu Glu Ser Gly Val Asp Ala Glu	1185	1190	1195 1200
Thr Ser Asp Gly Thr Leu Pro Ala Arg Arg Asn Arg Arg Ala Phe Gly	1205	1210	1215
Asp Lys Gln Ser Cys Leu His Pro Phe Thr Glu Asp Asp Ala Val Asp	1220	1225	1230
Pro Asn Asp Ser Asp Ile Asp Pro Glu Ser Arg Glu Thr Asp Leu Leu	1235	1240	1245
Ser Gly Met Asp Gly Lys Gly Ser Tyr Gln Leu Lys Gly Trp Lys Leu	1250	1255	1260
Thr Gln Gln Gln Phe Val Ala Leu Leu Trp Lys Arg Leu Leu Ile Ala	1265	1270	1275 1280
Arg Arg Ser Arg Lys Gly Phe Phe Ala Gln Ile Val Leu Pro Ala Val	1285	1290	1295
Phe Val Cys Ile Ala Leu Val Phe Ser Leu Ile Val Pro Pro Phe Gly	1300	1305	1310
Lys Tyr Pro Ser Leu Glu Leu Gln Pro Trp Met Tyr Asn Glu Gln Tyr	1315	1320	1325
Thr Phe Val Ser Asn Asp Ala Pro Glu Asp Met Gly Thr Gln Glu Leu	1330	1335	1340
Leu Asn Ala Leu Thr Lys Asp Pro Gly Phe Gly Thr Arg Cys Met Glu	1345	1350	1355 1360
Gly Asn Pro Ile Pro Asp Thr Pro Cys Leu Ala Gly Glu Glu Asp Trp	1365	1370	1375
Thr Ile Ser Pro Val Pro Gln Ser Ile Val Asp Leu Phe Gln Asn Gly	1380	1385	1390
Asn Trp Thr Met Lys Asn Pro Ser Pro Ala Cys Gln Cys Ser Ser Asp	1395	1400	1405
Lys Ile Lys Lys Met Leu Pro Val Cys Pro Pro Gly Ala Gly Gly Leu	1410	1415	1420
Pro Pro Pro Gln Arg Lys Gln Lys Thr Ala Asp Ile Leu Gln Asn Leu			

1425	1430	1435	1440
Thr Gly Arg Asn Ile Ser Asp Tyr Leu Val Lys Thr Tyr Val Gln Ile			
1445	1450	1455	
Ile Ala Lys Ser Leu Lys Asn Lys Ile Trp Val Asn Glu Phe Arg Tyr			
1460	1465	1470	
Gly Gly Phe Ser Leu Gly Val Ser Asn Ser Gln Ala Leu Pro Pro Ser			
1475	1480	1485	
His Glu Val Asn Asp Ala Ile Lys Gln Met Lys Lys Leu Leu Lys Leu			
1490	1495	1500	
Thr Lys Asp Thr Ser Ala Asp Arg Phe Leu Ser Ser Leu Gly Arg Phe			
1505	1510	1515	1520
Met Ala Gly Leu Asp Thr Lys Asn Asn Val Lys Val Trp Phe Asn Asn			
1525	1530	1535	
Lys Gly Trp His Ala Ile Ser Ser Phe Leu Asn Val Ile Asn Asn Ala			
1540	1545	1550	
Ile Leu Arg Ala Asn Leu Gln Lys Gly Glu Asn Pro Ser Gln Tyr Gly			
1555	1560	1565	
Ile Thr Ala Phe Asn His Pro Leu Asn Leu Thr Lys Gln Gln Leu Ser			
1570	1575	1580	
Glu Val Ala Leu Met Thr Thr Ser Val Asp Val Leu Val Ser Ile Cys			
1585	1590	1595	1600
Val Ile Phe Ala Met Ser Phe Val Pro Ala Ser Phe Val Val Phe Leu			
1605	1610	1615	
Ile Gln Glu Arg Val Ser Lys Ala Lys His Leu Gln Phe Ile Ser Gly			
1620	1625	1630	
Val Lys Pro Val Ile Tyr Trp Leu Ser Asn Phe Val Trp Asp Met Cys			
1635	1640	1645	
Asn Tyr Val Val Pro Ala Thr Leu Val Ile Ile Ile Phe Ile Cys Phe			
1650	1655	1660	
Gln Gln Lys Ser Tyr Val Ser Ser Thr Asn Leu Pro Val Leu Ala Leu			
1665	1670	1675	1680
Leu Leu Leu Leu Tyr Gly Trp Ser Ile Thr Pro Leu Met Tyr Pro Ala			
1685	1690	1695	
Ser Phe Val Phe Lys Ile Pro Ser Thr Ala Tyr Val Val Leu Thr Ser			
1700	1705	1710	
Val Asn Leu Phe Ile Gly Ile Asn Gly Ser Val Ala Thr Phe Val Leu			
1715	1720	1725	
Glu Leu Phe Thr Asn Asn Lys Leu Asn Asp Ile Asn Asp Ile Leu Lys			

Ser Val Phe Leu Ile Phe Pro His Phe Cys Leu Gly Arg Gly Leu Ile  
1745 1750 1755 1760

Asp Met Val Lys Asn Gln Ala Met Ala Asp Ala Leu Glu Arg Phe Gly  
1765 1770 1775

Glu Asn Arg Phe Val Ser Pro Leu Ser Trp Asp Leu Val Gly Arg Asn  
1780 1785 1790

Leu Phe Ala Met Ala Val Glu Gly Val Val Phe Phe Leu Ile Thr Val  
1795 1800 1805

Leu Ile Gln Tyr Arg Phe Phe Ile Arg Pro Arg Pro Val Lys Ala Lys  
1810 1815 1820

Leu Pro Pro Leu Asn Asp Glu Asp Glu Asp Val Arg Arg Glu Arg Gln  
1825 1830 1835 1840

Arg Ile Leu Asp Gly Gly Gly Gln Asn Asp Ile Leu Glu Ile Lys Glu  
1845 1850 1855

Leu Thr Lys Ile Tyr Arg Arg Lys Arg Lys Pro Ala Val Asp Arg Ile  
1860 1865 1870

Cys Ile Gly Ile Pro Pro Gly Glu Cys Phe Gly Leu Leu Gly Val Asn  
1875 1880 1885

Gly Ala Gly Lys Ser Thr Thr Phe Lys Met Leu Thr Gly Asp Thr Pro  
1890 1895 1900

Val Thr Arg Gly Asp Ala Phe Leu Asn Lys Asn Ser Ile Leu Ser Asn  
1905 1910 1915 1920

Ile His Glu Val His Gln Asn Met Gly Tyr Cys Pro Gln Phe Asp Ala  
1925 1930 1935

Ile Thr Glu Leu Leu Thr Gly Arg Glu His Val Glu Phe Phe Ala Leu  
1940 1945 1950

Leu Arg Gly Val Pro Glu Lys Glu Val Gly Lys Phe Gly Glu Trp Ala  
1955 1960 1965

Ile Arg Lys Leu Gly Leu Val Lys Tyr Gly Glu Lys Tyr Ala Ser Asn  
1970 1975 1980

Tyr Ser Gly Gly Asn Lys Arg Lys Leu Ser Thr Ala Met Ala Leu Ile  
1985 1990 1995 2000

Gly Gly Pro Pro Val Val Phe Leu Asp Glu Pro Thr Thr Gly Met Asp  
2005 2010 2015

Pro Lys Ala Arg Arg Phe Leu Trp Asn Cys Ala Leu Ser Ile Val Lys  
2020 2025 2030

Glu Gly Arg Ser Val Val Leu Thr Ser His Ser Met Glu Glu Cys Glu

2035	2040	2045
Ala Leu Cys Thr Arg Met Ala Ile Met Val Asn Gly Arg Phe Arg Cys		
2050	2055	2060
Leu Gly Ser Val Gln His Leu Lys Asn Arg Phe Gly Asp Gly Tyr Thr		
2065	2070	2075 2080
Ile Val Val Arg Ile Ala Gly Ser Asn Pro Asp Leu Lys Pro Val Gln		
2085	2090	2095
Glu Phe Phe Gly Leu Ala Phe Pro Gly Ser Val Leu Lys Glu Lys His		
2100	2105	2110
Arg Asn Met Leu Gln Tyr Gln Leu Pro Ser Ser Leu Ser Ser Leu Ala		
2115	2120	2125
Arg Ile Phe Ser Ile Leu Ser Gln Ser Lys Lys Arg Leu His Ile Glu		
2130	2135	2140
Asp Tyr Ser Val Ser Gln Thr Thr Leu Asp Gln Val Phe Val Asn Phe		
2145	2150	2155 2160
Ala Lys Asp Gln Ser Asp Asp Asp His Leu Lys Asp Leu Ser Leu His		
2165	2170	2175
Lys Asn Gln Thr Val Val Asp Val Ala Val Leu Thr Ser Phe Leu Gln		
2180	2185	2190
Asp Glu Lys Val Lys Glu Ser Tyr Val		
2195	2200	
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<213> Mus musculus		
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Leu Arg Lys Arg Gln Lys Ile Arg Phe Val Val Glu Leu Val Trp Pro		
20	25	30
Leu Ser Leu Phe Leu Val Leu Ile Trp Leu Arg Asn Ala Asn Pro Leu		
35	40	45
Tyr Ser Gln His Glu Cys His Phe Pro Asn Lys Ala Met Pro Ser Ala		
50	55	60
Gly Leu Leu Pro Trp Leu Gln Gly Ile Phe Cys Asn Met Asn Asn Pro		
65	70	75 80
Cys Phe Gln Asn Pro Thr Pro Gly Glu Ser Pro Gly Thr Val Ser Asn		
85	90	95



Thr	Pro	Asp	Ser	Pro	Ala	Ala	Arg	Arg	Ile	Met	Lys	Asn	Ala	Asn	Ser	405	410	415
Thr	Phe	Glu	Glu	Leu	Asp	Arg	Val	Arg	Lys	Leu	Val	Lys	Ala	Trp	Glu	420	425	430
Glu	Val	Gly	Pro	Gln	Ile	Trp	Tyr	Phe	Phe	Glu	Lys	Ser	Thr	Gln	Met	435	440	445
Thr	Val	Ile	Arg	Asp	Thr	Leu	Gln	His	Pro	Thr	Val	Lys	Asp	Phe	Ile	450	455	460
Asn	Arg	Gln	Leu	Gly	Glu	Glu	Gly	Ile	Thr	Thr	Glu	Ala	Val	Leu	Asn	465	470	475
Phe	Phe	Ser	Asn	Gly	Pro	Gln	Glu	Lys	Gln	Ala	Asp	Asp	Met	Thr	Ser	485	490	495
Phe	Asp	Trp	Arg	Asp	Ile	Phe	Asn	Ile	Thr	Asp	Arg	Phe	Leu	Arg	Leu	500	505	510
Ala	Asn	Gln	Tyr	Leu	Glu	Cys	Leu	Val	Leu	Asp	Lys	Phe	Glu	Ser	Tyr	515	520	525
Asp	Asp	Glu	Val	Gln	Leu	Thr	Gln	Arg	Ala	Leu	Ser	Leu	Leu	Glu	Glu	530	535	540
Asn	Arg	Phe	Trp	Ala	Gly	Val	Val	Phe	Pro	Gly	Met	Tyr	Pro	Trp	Ala	545	550	555
Ser	Ser	Leu	Pro	Pro	His	Val	Lys	Tyr	Lys	Ile	Arg	Met	Asp	Ile	Asp	565	570	575
Val	Val	Glu	Lys	Thr	Asn	Lys	Ile	Lys	Asp	Arg	Tyr	Trp	Asp	Ser	Gly	580	585	590
Pro	Arg	Ala	Asp	Pro	Val	Glu	Asp	Phe	Arg	Tyr	Ile	Trp	Gly	Gly	Phe	595	600	605
Ala	Tyr	Leu	Gln	Asp	Met	Val	Glu	Gln	Gly	Ile	Val	Lys	Ser	Gln	Met	610	615	620
Gln	Ala	Glu	Pro	Pro	Ile	Gly	Val	Tyr	Leu	Gln	Gln	Met	Pro	Tyr	Pro	625	630	635
Cys	Phe	Val	Asp	Asp	Ser	Phe	Met	Ile	Ile	Leu	Asn	Arg	Cys	Phe	Pro	645	650	655
Ile	Phe	Met	Val	Leu	Ala	Trp	Ile	Tyr	Ser	Val	Ser	Met	Thr	Val	Lys	660	665	670
Gly	Ile	Val	Leu	Glu	Lys	Glu	Leu	Arg	Leu	Lys	Glu	Thr	Leu	Lys	Asn	675	680	685
Gln	Gly	Val	Ser	Asn	Ala	Val	Ile	Trp	Cys	Thr	Trp	Phe	Leu	Asp	Ser	690	695	700

Phe	Ser	Ile	Met	Ala	Leu	Ser	Ile	Phe	Leu	Leu	Thr	Leu	Phe	Ile	Met	705	710	715	720
His	Gly	Arg	Ile	Leu	His	Tyr	Ser	Asp	Pro	Phe	Ile	Leu	Phe	Leu	Phe	725	730	735	
Leu	Leu	Ala	Phe	Ala	Thr	Ala	Thr	Ile	Met	Gln	Ser	Phe	Leu	Leu	Ser	740	745	750	
Thr	Leu	Phe	Ser	Lys	Ala	Ser	Leu	Ala	Ala	Ala	Cys	Ser	Gly	Val	Ile	755	760	765	
Tyr	Phe	Thr	Leu	Tyr	Leu	Pro	His	Val	Leu	Cys	Phe	Ala	Trp	Gln	Asp	770	775	780	
Arg	Met	Thr	Ala	Asp	Leu	Lys	Thr	Thr	Val	Ser	Leu	Leu	Ser	Ser	Val	785	790	795	800
Ala	Phe	Gly	Phe	Gly	Thr	Glu	Tyr	Leu	Val	Arg	Phe	Glu	Glu	Gln	Gly	805	810	815	
Leu	Gly	Leu	Gln	Trp	Ser	Asn	Ile	Gly	Lys	Ser	Pro	Leu	Glu	Gly	Asp	820	825	830	
Glu	Phe	Ser	Phe	Leu	Leu	Ser	Met	Lys	Met	Met	Leu	Leu	Asp	Ala	Ala	835	840	845	
Leu	Tyr	Gly	Leu	Leu	Ala	Trp	Tyr	Leu	Asp	Gln	Val	Phe	Pro	Gly	Asp	850	855	860	
Tyr	Gly	Thr	Pro	Leu	Pro	Trp	Tyr	Phe	Leu	Leu	Gln	Glu	Ser	Tyr	Trp	865	870	875	880
Leu	Gly	Gly	Glu	Gly	Cys	Ser	Thr	Arg	Glu	Glu	Arg	Ala	Leu	Glu	Lys	885	890	895	
Thr	Glu	Pro	Leu	Thr	Glu	Glu	Met	Glu	Asp	Pro	Glu	His	Pro	Glu	Gly	900	905	910	
Met	Asn	Asp	Ser	Phe	Phe	Glu	Arg	Glu	Leu	Pro	Gly	Leu	Val	Pro	Gly	915	920	925	
Val	Cys	Val	Lys	Asn	Leu	Val	Lys	Val	Phe	Glu	Pro	Ser	Gly	Arg	Pro	930	935	940	
Ala	Val	Asp	Arg	Leu	Asn	Ile	Thr	Phe	Tyr	Glu	Asn	Gln	Ile	Thr	Ala	945	950	955	960
Phe	Leu	Gly	His	Asn	Gly	Ala	Gly	Lys	Thr	Thr	Thr	Leu	Ser	Ile	Leu	965	970	975	
Thr	Gly	Leu	Leu	Pro	Pro	Thr	Ser	Gly	Thr	Val	Leu	Ile	Gly	Gly	Lys	980	985	990	
Asp	Ile	Glu	Thr	Asn	Leu	Asp	Val	Val	Arg	Gln	Ser	Leu	Gly	Met	Cys	995	1000	1005	



Pro Gln His Asn Ile Leu Phe His His Leu Thr Val Ala Glu His Ile  
 1010 1015 1020  
 Leu Phe Tyr Ala Gln Leu Lys Gly Arg Ser Trp Glu Glu Ala Gln Leu  
 1025 1030 1035 1040  
 Glu Met Glu Ala Met Leu Glu Asp Thr Gly Leu His His Lys Arg Asn  
 1045 1050 1055  
 Glu Glu Ala Gln Asp Leu Ser Gly Gly Met Gln Arg Lys Leu Ser Val  
 1060 1065 1070  
 Ala Ile Ala Phe Val Gly Asp Ser Lys Val Val Val Leu Asp Glu Pro  
 1075 1080 1085  
 Thr Ser Gly Val Asp Pro Tyr Ser Arg Arg Ser Ile Trp Asp Leu Leu  
 1090 1095 1100  
 Leu Lys Tyr Arg Ser Gly Arg Thr Ile Ile Met Ser Thr His His Met  
 1105 1110 1115 1120  
 Asp Glu Ala Asp Leu Leu Gly Asp Arg Ile Ala Ile Ile Ser Gln Gly  
 1125 1130 1135  
 Arg Leu Tyr Cys Ser Gly Thr Pro Leu Phe Leu Lys Asn Cys Phe Gly  
 1140 1145 1150  
 Thr Gly Phe Tyr Leu Thr Leu Val Arg Lys Met Lys Asn Ile Gln Ser  
 1155 1160 1165  
 Gln Arg Gly Gly Cys Glu Gly Val Cys Ser Cys Thr Ser Lys Gly Phe  
 1170 1175 1180  
 Ser Thr Arg Cys Pro Thr Arg Val Asp Glu Ile Thr Glu Glu Gln Val  
 1185 1190 1195 1200  
 Leu Asp Gly Asp Val Gln Glu Leu Met Asp Leu Val Tyr His His Val  
 1205 1210 1215  
 Pro Glu Ala Lys Leu Val Glu Cys Ile Gly Gln Glu Leu Ile Phe Leu  
 1220 1225 1230  
 Leu Pro Asn Lys Asn Phe Lys Gln Arg Ala Tyr Ala Ser Leu Phe Arg  
 1235 1240 1245  
 Glu Leu Glu Glu Thr Leu Ala Asp Leu Gly Leu Ser Ser Phe Gly Ile  
 1250 1255 1260  
 Ser Asp Thr Pro Leu Glu Glu Ile Phe Leu Lys Val Thr Glu Asp Ala  
 1265 1270 1275 1280  
 Gly Ala Gly Ser Met Phe Val Gly Gly Ala Gln Gln Lys Arg Glu Gln  
 1285 1290 1295  
 Ala Gly Leu Arg His Pro Cys Ser Ala Pro Thr Glu Lys Leu Arg Gln  
 1300 1305 1310

Tyr Ala Gln Ala Pro His Thr Cys Ser Pro Gly Gln Val Asp Pro Pro  
 1315 1320 1325  
 Lys Gly Gln Pro Ser Pro Glu Pro Glu Asp Pro Gly Val Pro Phe Asn  
 1330 1335 1340  
 Thr Gly Ala Arg Leu Ile Leu Gln His Val Gln Ala Leu Leu Val Lys  
 1345 1350 1355 1360  
 Arg Phe His His Thr Ile Arg Ser Arg Lys Asp Phe Val Ala Gln Ile  
 1365 1370 1375  
 Val Leu Pro Ala Thr Phe Val Phe Leu Ala Leu Met Leu Ser Ile Ile  
 1380 1385 1390  
 Val Pro Pro Phe Gly Glu Phe Pro Ala Leu Thr Leu His Pro Trp Met  
 1395 1400 1405  
 Tyr Gly His Gln Tyr Thr Phe Phe Ser Met Asp Glu Pro Asn Asn Glu  
 1410 1415 1420  
 His Leu Glu Val Leu Ala Asp Val Leu Leu Asn Arg Pro Gly Phe Gly  
 1425 1430 1435 1440  
 Asn Arg Cys Leu Lys Glu Glu Trp Leu Pro Glu Tyr Pro Cys Ile Asn  
 1445 1450 1455  
 Ala Thr Ser Trp Lys Thr Pro Ser Val Ser Pro Asn Ile Thr His Leu  
 1460 1465 1470  
 Phe Gln Lys Gln Lys Trp Thr Ala Ala His Pro Ser Pro Ser Cys Lys  
 1475 1480 1485  
 Cys Ser Thr Arg Glu Lys Leu Thr Met Leu Pro Glu Cys Pro Glu Gly  
 1490 1495 1500  
 Ala Gly Gly Leu Pro Pro Gln Arg Thr Gln Arg Ser Thr Glu Val  
 1505 1510 1515 1520  
 Leu Gln Asp Leu Thr Asn Arg Asn Ile Ser Asp Tyr Leu Val Lys Thr  
 1525 1530 1535  
 Tyr Pro Ala Leu Ile Arg Ser Ser Leu Lys Ser Lys Phe Trp Val Asn  
 1540 1545 1550  
 Glu Gln Arg Tyr Gly Gly Ile Ser Ile Gly Gly Lys Leu Pro Ala Ile  
 1555 1560 1565  
 Pro Ile Ser Gly Glu Ala Leu Val Gly Phe Leu Ser Gly Leu Gly Gln  
 1570 1575 1580  
 Met Met Asn Val Ser Gly Gly Pro Val Thr Arg Glu Ala Ser Lys Glu  
 1585 1590 1595 1600  
 Met Leu Asp Phe Leu Lys His Leu Glu Thr Thr Asp Asn Ile Lys Val  
 1605 1610 1615

Trp Phe Asn Asn Lys Gly Trp His Ala Leu Val Ser Phe Leu Asn Val  
 1620 1625 1630  
 Ala His Asn Ala Ile Leu Arg Ala Ser Leu Pro Arg Asp Arg Asp Pro  
 1635 1640 1645  
 Glu Glu Tyr Gly Ile Thr Val Ile Ser Gln Pro Leu Asn Leu Thr Lys  
 1650 1655 1660  
 Glu Gln Leu Ser Asp Ile Thr Val Leu Thr Thr Ser Val Asp Ala Val  
 1665 1670 1675 1680  
 Val Ala Ile Cys Val Ile Phe Ala Met Ser Phe Val Pro Ala Ser Phe  
 1685 1690 1695  
 Val Leu Tyr Leu Ile Gln Glu Arg Val Thr Lys Ala Lys His Leu Gln  
 1700 1705 1710  
 Phe Ile Ser Gly Val Ser Pro Thr Thr Tyr Trp Leu Thr Asn Phe Leu  
 1715 1720 1725  
 Trp Asp Ile Met Asn Tyr Ala Val Ser Ala Gly Leu Val Val Gly Ile  
 1730 1735 1740  
 Phe Ile Gly Phe Gln Lys Lys Ala Tyr Thr Ser Pro Asp Asn Leu Pro  
 1745 1750 1755 1760  
 Ala Leu Val Ser Leu Leu Met Leu Tyr Gly Trp Ala Val Ile Pro Met  
 1765 1770 1775  
 Met Tyr Pro Ala Ser Phe Leu Phe Glu Val Pro Ser Thr Ala Tyr Val  
 1780 1785 1790  
 Ala Leu Ser Cys Ala Asn Leu Phe Ile Gly Ile Asn Ser Ser Ala Ile  
 1795 1800 1805  
 Thr Phe Val Leu Glu Leu Phe Glu Asn Asn Arg Thr Leu Leu Arg Phe  
 1810 1815 1820  
 Asn Ala Met Leu Arg Lys Leu Leu Ile Val Phe Pro His Phe Cys Leu  
 1825 1830 1835 1840  
 Gly Arg Gly Leu Ile Asp Leu Ala Leu Ser Gln Ala Val Thr Asp Val  
 1845 1850 1855  
 Tyr Ala Gln Phe Gly Glu Glu Tyr Ser Ala Asn Pro Phe Gln Trp Asp  
 1860 1865 1870  
 Leu Ile Gly Lys Asn Leu Val Ala Met Ala Ile Glu Gly Val Val Tyr  
 1875 1880 1885  
 Phe Leu Leu Thr Leu Leu Ile Gln His His Phe Phe Leu Thr Arg Trp  
 1890 1895 1900  
 Ile Ala Glu Pro Ala Arg Glu Pro Val Phe Asp Glu Asp Asp Asp Val  
 1905 1910 1915 1920

Ala Glu Glu Arg Gln Arg Val Met Ser Gly Gly Asn Lys Thr Asp Ile  
1925 1930 1935

Leu Lys Leu Asn Glu Leu Thr Lys Val Tyr Ser Gly Ser Ser Ser Pro  
1940 1945 1950

Ala Val Asp Arg Leu Cys Val Gly Val Arg Pro Gly Glu Cys Phe Gly  
1955 1960 1965

Leu Leu Gly Val Asn Gly Ala Gly Lys Thr Thr Thr Phe Lys Met Leu  
1970 1975 1980

Thr Gly Asp Thr Thr Val Thr Ser Gly Asp Ala Thr Val Ala Gly Lys  
1985 1990 1995 2000

Ser Ile Leu Thr Ser Ile Ser Asp Val His Gln Asn Met Gly Tyr Cys  
2005 2010 2015

Pro Gln Phe Asp Ala Ile Asp Asp Leu Leu Thr Gly Arg Glu His Leu  
2020 2025 2030

Tyr Leu Tyr Ala Arg Leu Arg Gly Val Pro Ser Lys Glu Ile Glu Lys  
2035 2040 2045

Val Ala Asn Trp Gly Ile Gln Ser Leu Gly Leu Ser Leu Tyr Ala Asp  
2050 2055 2060

Arg Leu Ala Gly Thr Tyr Ser Gly Gly Asn Lys Arg Lys Leu Ser Thr  
2065 2070 2075 2080

Ala Ile Ala Leu Thr Gly Cys Pro Pro Leu Leu Leu Leu Asp Glu Pro  
2085 2090 2095

Thr Thr Gly Met Asp Pro Gln Ala Arg Arg Met Leu Trp Asn Thr Ile  
2100 2105 2110

Val Ser Ile Ile Arg Glu Gly Arg Ala Val Val Leu Thr Ser His Ser  
2115 2120 2125

Met Glu Glu Cys Glu Ala Leu Cys Thr Arg Leu Ala Ile Met Val Lys  
2130 2135 2140

Gly Thr Phe Gln Cys Leu Gly Thr Ile Gln His Leu Lys Tyr Lys Phe  
2145 2150 2155 2160

Gly Asp Gly Tyr Ile Val Thr Met Lys Ile Lys Ser Pro Lys Asp Asp  
2165 2170 2175

Leu Leu Pro Asp Leu Asn Pro Val Glu Gln Phe Phe Gln Gly Asn Phe  
2180 2185 2190

Pro Gly Ser Val Gln Arg Glu Arg His His Ser Met Leu Gln Phe Gln  
2195 2200 2205

Val Pro Ser Ser Ser Leu Ala Arg Ile Phe Gln Leu Leu Ile Ser His  
2210 2215 2220

Lys Asp Ser Leu Leu Ile Glu Glu Tyr Ser Val Thr Gln Thr Thr Leu  
2225 2230 2235 2240

Asp Gln Val Phe Val Asn Phe Ala Lys Gln Gln Thr Glu Thr Tyr Asp  
2245 2250 2255

Leu Pro Leu His Pro Arg Ala Ala Gly Ala Ser Trp Gln Ala Lys Leu  
2260 2265 2270

Glu Glu Lys Ser Gly Arg Leu Gln Thr Gln Glu Pro Leu Pro Ala Gly  
2275 2280 2285

Ser Glu Gln Leu Ala Asn Gly Ser Asn Pro Thr Ala Ala Glu Asp Lys  
2290 2295 2300

His Thr Arg Ser Pro Gln  
2305 2310

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Phe Arg Arg Arg Gln Thr Cys Gln Leu Leu Leu Glu Val Ala Trp Pro  
20 25 30

Leu Phe Ile Phe Leu Ile Leu Ile Ser Val Arg Leu Ser Tyr Pro Pro  
35 40 45

Tyr Glu Gln His Glu Cys His Phe Pro Asn Lys Ala Met Pro Ser Ala  
50 55 60

Gly Thr Leu Pro Trp Val Gln Gly Ile Ile Cys Asn Ala Asn Asn Pro  
65 70 75 80

Cys Phe Arg Tyr Pro Thr Pro Gly Glu Ala Pro Gly Val Val Gly Asn  
85 90 95

Phe Asn Lys Ser Ile Val Ala Arg Leu Phe Ser Asp Ala Arg Arg Leu  
100 105 110

Leu Leu Tyr Ser Gln Lys Asp Thr Ser Met Lys Asp Met Arg Lys Val  
115 120 125

Leu Arg Thr Leu Gln Gln Ile Lys Lys Ser Ser Ser Asn Leu Lys Leu  
130 135 140

Gln Asp Phe Leu Val Asp Asn Glu Thr Phe Ser Gly Phe Leu Tyr His  
145 150 155 160

Asn Leu Ser Leu Pro Lys Ser Thr Val Asp Lys Met Leu Arg Ala Asp  
165 170 175

Val	Ile	Leu	His	Lys	Val	Phe	Leu	Gln	Gly	Tyr	Gln	Leu	His	Leu	Thr	180	185	190	
Ser	Leu	Cys	Asn	Gly	Ser	Lys	Ser	Glu	Glu	Met	Ile	Gln	Leu	Gly	Asp	195	200	205	
Gln	Glu	Val	Ser	Glu	Leu	Cys	Gly	Leu	Pro	Arg	Glu	Lys	Leu	Ala	Ala	210	215	220	
Ala	Glu	Arg	Val	Leu	Arg	Ser	Asn	Met	Asp	Ile	Leu	Lys	Pro	Ile	Leu	225	230	235	240
Arg	Thr	Leu	Asn	Ser	Thr	Ser	Pro	Phe	Pro	Ser	Lys	Glu	Leu	Ala	Glu	245	250	255	
Ala	Thr	Lys	Thr	Leu	Leu	His	Ser	Leu	Gly	Thr	Leu	Ala	Gln	Glu	Leu	260	265	270	
Phe	Ser	Met	Arg	Ser	Trp	Ser	Asp	Met	Arg	Gln	Glu	Val	Met	Phe	Leu	275	280	285	
Thr	Asn	Val	Asn	Ser	Ser	Ser	Ser	Ser	Thr	Gln	Ile	Tyr	Gln	Ala	Val	290	295	300	
Ser	Arg	Ile	Val	Cys	Gly	His	Pro	Glu	Gly	Gly	Gly	Leu	Lys	Ile	Lys	305	310	315	320
Ser	Leu	Asn	Trp	Tyr	Glu	Asp	Asn	Asn	Tyr	Lys	Ala	Leu	Phe	Gly	Gly	325	330	335	
Asn	Gly	Thr	Glu	Glu	Asp	Ala	Glu	Thr	Phe	Tyr	Asp	Asn	Ser	Thr	Thr	340	345	350	
Pro	Tyr	Cys	Asn	Asp	Leu	Met	Lys	Asn	Leu	Glu	Ser	Ser	Pro	Leu	Ser	355	360	365	
Arg	Ile	Ile	Trp	Lys	Ala	Leu	Lys	Pro	Leu	Leu	Val	Gly	Lys	Ile	Leu	370	375	380	
Tyr	Thr	Pro	Asp	Thr	Pro	Ala	Thr	Arg	Gln	Val	Met	Ala	Glu	Val	Asn	385	390	395	400
Lys	Thr	Phe	Gln	Glu	Leu	Ala	Val	Phe	His	Asp	Leu	Glu	Gly	Met	Trp	405	410	415	
Glu	Glu	Leu	Ser	Pro	Lys	Ile	Trp	Thr	Phe	Met	Glu	Asn	Ser	Gln	Glu	420	425	430	
Met	Asp	Leu	Val	Arg	Met	Leu	Leu	Asp	Ser	Arg	Asp	Asn	Asp	His	Phe	435	440	445	
Trp	Glu	Gln	Gln	Leu	Asp	Gly	Leu	Asp	Trp	Thr	Ala	Gln	Asp	Ile	Val	450	455	460	
Ala	Phe	Leu	Ala	Lys	His	Pro	Glu	Asp	Val	Gln	Ser	Ser	Asn	Gly	Ser	465	470	475	480

Val	Tyr	Thr	Trp	Arg	Glu	Ala	Phe	Asn	Glu	Thr	Asn	Gln	Ala	Ile	Arg	
				485					490					495		
Thr	Ile	Ser	Arg	Phe	Met	Glu	Cys	Val	Asn	Leu	Asn	Lys	Leu	Glu	Pro	
			500					505					510			
Ile	Ala	Thr	Glu	Val	Trp	Leu	Ile	Asn	Lys	Ser	Met	Glu	Leu	Leu	Asp	
		515					520					525				
Glu	Arg	Lys	Phe	Trp	Ala	Gly	Ile	Val	Phe	Thr	Gly	Ile	Thr	Pro	Gly	
	530					535					540					
Ser	Ile	Glu	Leu	Pro	His	His	Val	Lys	Tyr	Lys	Ile	Arg	Met	Asp	Ile	
545					550				555						560	
Asp	Asn	Val	Glu	Arg	Thr	Asn	Lys	Ile	Lys	Asp	Gly	Tyr	Trp	Asp	Pro	
				565					570					575		
Gly	Pro	Arg	Ala	Asp	Pro	Phe	Glu	Asp	Met	Arg	Tyr	Val	Trp	Gly	Gly	
			580					585					590			
Phe	Ala	Tyr	Leu	Gln	Asp	Val	Val	Glu	Gln	Ala	Ile	Ile	Arg	Val	Leu	
		595					600					605				
Thr	Gly	Thr	Glu	Lys	Lys	Thr	Gly	Val	Tyr	Met	Gln	Gln	Met	Pro	Tyr	
	610					615					620					
Pro	Cys	Tyr	Val	Asp	Asp	Ile	Phe	Leu	Arg	Val	Met	Ser	Arg	Ser	Met	
625					630					635					640	
Pro	Leu	Phe	Met	Thr	Leu	Ala	Trp	Ile	Tyr	Ser	Val	Ala	Val	Ile	Ile	
				645					650					655		
Lys	Gly	Ile	Val	Tyr	Glu	Lys	Glu	Ala	Arg	Leu	Lys	Glu	Thr	Met	Arg	
			660					665					670			
Ile	Met	Gly	Leu	Asp	Asn	Ser	Ile	Leu	Trp	Phe	Ser	Trp	Phe	Ile	Ser	
		675					680					685				
Ser	Leu	Ile	Pro	Leu	Leu	Val	Ser	Ala	Gly	Leu	Leu	Val	Val	Ile	Leu	
	690					695					700					
Lys	Leu	Gly	Asn	Leu	Leu	Pro	Tyr	Ser	Asp	Pro	Ser	Val	Val	Phe	Val	
705					710					715					720	
Phe	Leu	Ser	Val	Phe	Ala	Val	Val	Thr	Ile	Leu	Gln	Cys	Phe	Leu	Ile	
				725					730					735		
Ser	Thr	Leu	Phe	Ser	Arg	Ala	Asn	Leu	Ala	Ala	Ala	Cys	Gly	Gly	Ile	
			740					745					750			
Ile	Tyr	Phe	Thr	Leu	Tyr	Leu	Pro	Tyr	Val	Leu	Cys	Val	Ala	Trp	Gln	
		755					760					765				
Asp	Tyr	Val	Gly	Phe	Thr	Leu	Lys	Ile	Phe	Ala	Ser	Leu	Leu	Ser	Pro	
		770					775					780				

Val	Ala	Phe	Gly	Phe	Gly	Cys	Glu	Tyr	Phe	Ala	Leu	Phe	Glu	Glu	Gln	785	790	795	800
Gly	Ile	Gly	Val	Gln	Trp	Asp	Asn	Leu	Phe	Glu	Ser	Pro	Val	Glu	Glu	805	810	815	
Asp	Gly	Phe	Asn	Leu	Thr	Thr	Ser	Val	Ser	Met	Met	Leu	Phe	Asp	Thr	820	825	830	
Phe	Leu	Tyr	Gly	Val	Met	Thr	Trp	Tyr	Ile	Glu	Ala	Val	Phe	Pro	Gly	835	840	845	
Gln	Tyr	Gly	Ile	Pro	Arg	Pro	Trp	Tyr	Phe	Pro	Cys	Thr	Lys	Ser	Tyr	850	855	860	
Trp	Phe	Gly	Glu	Glu	Ser	Asp	Glu	Lys	Ser	His	Pro	Gly	Ser	Asn	Gln	865	870	875	880
Lys	Arg	Ile	Ser	Glu	Ile	Cys	Met	Glu	Glu	Glu	Pro	Thr	His	Leu	Lys	885	890	895	
Leu	Gly	Val	Ser	Ile	Gln	Asn	Leu	Val	Lys	Val	Tyr	Arg	Asp	Gly	Met	900	905	910	
Lys	Val	Ala	Val	Asp	Gly	Leu	Ala	Leu	Asn	Phe	Tyr	Glu	Gly	Gln	Ile	915	920	925	
Thr	Ser	Phe	Leu	Gly	His	Asn	Gly	Ala	Gly	Lys	Thr	Thr	Thr	Met	Ser	930	935	940	
Ile	Leu	Thr	Gly	Leu	Phe	Pro	Pro	Thr	Ser	Gly	Thr	Ala	Tyr	Ile	Leu	945	950	955	960
Gly	Lys	Asp	Ile	Arg	Ser	Glu	Met	Ser	Thr	Ile	Arg	Gln	Asn	Leu	Gly	965	970	975	
Val	Cys	Pro	Gln	His	Asn	Val	Leu	Phe	Asp	Met	Leu	Thr	Val	Glu	Glu	980	985	990	
His	Ile	Trp	Phe	Tyr	Ala	Arg	Leu	Lys	Gly	Leu	Ser	Glu	Lys	His	Val	995	1000	1005	
Lys	Ala	Glu	Met	Glu	Gln	Met	Ala	Leu	Asp	Val	Gly	Leu	Pro	Ser	Ser	1010	1015	1020	
Lys	Leu	Lys	Ser	Lys	Thr	Ser	Gln	Leu	Ser	Gly	Gly	Met	Gln	Arg	Lys	1025	1030	1035	1040
Leu	Ser	Val	Ala	Leu	Ala	Phe	Val	Gly	Gly	Ser	Lys	Val	Val	Ile	Leu	1045	1050	1055	
Asp	Glu	Pro	Thr	Ala	Gly	Val	Asp	Pro	Tyr	Ser	Arg	Arg	Gly	Ile	Trp	1060	1065	1070	
Glu	Leu	Leu	Leu	Lys	Tyr	Arg	Gln	Gly	Arg	Thr	Ile	Ile	Leu	Ser	Thr	1075	1080	1085	





Asn Asp Ala Pro Glu Asp Thr Gly Thr Leu Glu Leu Leu Asn Ala Leu	1395	1400	1405
Thr Lys Asp Pro Gly Phe Gly Thr Arg Cys Met Glu Gly Asn Pro Ile	1410	1415	1420
Pro Asp Thr Pro Cys Gln Ala Gly Glu Glu Glu Trp Thr Thr Ala Pro	1425	1430	1435 1440
Val Pro Gln Thr Ile Met Asp Leu Phe Gln Asn Gly Asn Trp Thr Met	1445	1450	1455
Gln Asn Pro Ser Pro Ala Cys Gln Cys Ser Ser Asp Lys Ile Lys Lys	1460	1465	1470
Met Leu Pro Val Cys Pro Pro Gly Ala Gly Gly Leu Pro Pro Pro Gln	1475	1480	1485
Arg Lys Gln Asn Thr Ala Asp Ile Leu Gln Asp Leu Thr Gly Arg Asn	1490	1495	1500
Ile Ser Asp Tyr Leu Val Lys Thr Tyr Val Gln Ile Ile Ala Lys Ser	1505	1510	1515 1520
Leu Lys Asn Lys Ile Trp Val Asn Glu Phe Arg Tyr Gly Gly Phe Ser	1525	1530	1535
Leu Gly Val Ser Asn Thr Gln Ala Leu Pro Pro Ser Gln Glu Val Asn	1540	1545	1550
Asp Ala Thr Lys Gln Met Lys Lys His Leu Lys Leu Ala Lys Asp Ser	1555	1560	1565
Ser Ala Asp Arg Phe Leu Asn Ser Leu Gly Arg Phe Met Thr Gly Leu	1570	1575	1580
Asp Thr Arg Asn Asn Val Lys Val Trp Phe Asn Asn Lys Gly Trp His	1585	1590	1595 1600
Ala Ile Ser Ser Phe Leu Asn Val Ile Asn Asn Ala Ile Leu Arg Ala	1605	1610	1615
Asn Leu Gln Lys Gly Glu Asn Pro Ser His Tyr Gly Ile Thr Ala Phe	1620	1625	1630
Asn His Pro Leu Asn Leu Thr Lys Gln Gln Leu Ser Glu Val Ala Pro	1635	1640	1645
Met Thr Thr Ser Val Asp Val Leu Val Ser Ile Cys Val Ile Phe Ala	1650	1655	1660
Met Ser Phe Val Pro Ala Ser Phe Val Val Phe Leu Ile Gln Glu Arg	1665	1670	1675 1680
Val Ser Lys Ala Lys His Leu Gln Phe Ile Ser Gly Val Lys Pro Val	1685	1690	1695



Leu Thr Gly Arg Glu His Val Glu Phe Phe Ala Leu Leu Arg Gly Val  
 2005 2010 2015  
 Pro Glu Lys Glu Val Gly Lys Val Gly Glu Trp Ala Ile Arg Lys Leu  
 2020 2025 2030  
 Gly Leu Val Lys Tyr Gly Glu Lys Tyr Ala Gly Asn Tyr Ser Gly Gly  
 2035 2040 2045  
 Asn Lys Arg Lys Leu Ser Thr Ala Met Ala Leu Ile Gly Gly Pro Pro  
 2050 2055 2060  
 Val Val Phe Leu Asp Glu Pro Thr Thr Gly Met Asp Pro Lys Ala Arg  
 2065 2070 2075 2080  
 Arg Phe Leu Trp Asn Cys Ala Leu Ser Val Val Lys Glu Gly Arg Ser  
 2085 2090 2095  
 Val Val Leu Thr Ser His Ser Met Glu Glu Cys Glu Ala Leu Cys Thr  
 2100 2105 2110  
 Arg Met Ala Ile Met Val Asn Gly Arg Phe Arg Cys Leu Gly Ser Val  
 2115 2120 2125  
 Gln His Leu Lys Asn Arg Phe Gly Asp Gly Tyr Thr Ile Val Val Arg  
 2130 2135 2140  
 Ile Ala Gly Ser Asn Pro Asp Leu Lys Pro Val Gln Asp Phe Phe Gly  
 2145 2150 2155 2160  
 Leu Ala Phe Pro Gly Ser Val Pro Lys Glu Lys His Arg Asn Met Leu  
 2165 2170 2175  
 Gln Tyr Gln Leu Pro Ser Ser Leu Ser Ser Leu Ala Arg Ile Phe Ser  
 2180 2185 2190  
 Ile Leu Ser Gln Ser Lys Lys Arg Leu His Ile Glu Asp Tyr Ser Val  
 2195 2200 2205  
 Ser Gln Thr Thr Leu Asp Gln Val Phe Val Asn Phe Ala Lys Asp Gln  
 2210 2215 2220  
 Ser Asp Asp Asp His Leu Lys Asp Leu Ser Leu His Lys Asn Gln Thr  
 2225 2230 2235 2240  
 Val Val Asp Val Ala Val Leu Thr Ser Phe Leu Gln Asp Glu Lys Val  
 2245 2250 2255  
 Lys Glu Ser Tyr Val  
 2260

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<400> 12

Met Gly Phe Val Arg Gln Ile Gln Leu Leu Leu Trp Lys Asn Trp Thr  
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Leu Arg Lys Arg Gln Lys Ile Arg Phe Val Val Glu Leu Val Trp Pro  
20 25 30

Leu Ser Leu Phe Leu Val Leu Ile Trp Leu Arg Asn Ala Asn Pro Leu  
35 40 45

Tyr Ser His His Glu Cys His Phe Pro Asn Lys Ala Met Pro Ser Ala  
50 55 60

Gly Met Leu Pro Trp Leu Gln Gly Ile Phe Cys Asn Val Asn Asn Pro  
65 70 75 80

Cys Phe Gln Ser Pro Thr Pro Gly Glu Ser Pro Gly Ile Val Ser Asn  
85 90 95

Tyr Asn Asn Ser Ile Leu Ala Arg Val Tyr Arg Asp Phe Gln Glu Leu  
100 105 110

Leu Met Asn Ala Pro Glu Ser Gln His Leu Gly Arg Ile Trp Thr Glu  
115 120 125

Leu His Ile Leu Ser Gln Phe Met Asp Thr Leu Arg Thr His Pro Glu  
130 135 140

Arg Ile Ala Gly Arg Gly Ile Arg Ile Arg Asp Ile Leu Lys Asp Glu  
145 150 155 160

Glu Thr Leu Thr Leu Phe Leu Ile Lys Asn Ile Gly Leu Ser Asp Ser  
165 170 175

Val Val Tyr Leu Leu Ile Asn Ser Gln Val Arg Pro Glu Gln Phe Ala  
180 185 190

His Gly Val Pro Asp Leu Ala Leu Lys Asp Ile Ala Cys Ser Glu Ala  
195 200 205

Leu Leu Glu Arg Phe Ile Ile Phe Ser Gln Arg Arg Gly Ala Lys Thr  
210 215 220

Val Arg Tyr Ala Leu Cys Ser Leu Ser Gln Gly Thr Leu Gln Trp Ile  
225 230 235 240

Glu Asp Thr Leu Tyr Ala Asn Val Asp Phe Phe Lys Leu Phe Arg Val  
245 250 255

Leu Pro Thr Leu Leu Asp Ser Arg Ser Gln Gly Ile Asn Leu Arg Ser  
260 265 270

Trp Gly Gly Ile Leu Ser Asp Met Ser Pro Arg Ile Gln Glu Phe Ile  
275 280 285

His Arg Pro Ser Met Gln Asp Leu Leu Trp Val Thr Arg Pro Leu Met

290	295	300
Gln Asn Gly Gly Pro Glu Thr Phe Thr Lys Leu Met Gly Ile Leu Ser 305 310 315 320		
Asp Leu Leu Cys Gly Tyr Pro Glu Gly Gly Gly Ser Arg Val Leu Ser 325 330 335		
Phe Asn Trp Tyr Glu Asp Asn Asn Tyr Lys Ala Phe Leu Gly Ile Asp 340 345 350		
Ser Thr Arg Lys Asp Pro Ile Tyr Ser Tyr Asp Arg Arg Thr Thr Ser 355 360 365		
Phe Cys Asn Ala Leu Ile Gln Ser Leu Glu Ser Asn Pro Leu Thr Lys 370 375 380		
Ile Ala Trp Arg Ala Ala Lys Pro Leu Leu Met Gly Lys Ile Leu Tyr 385 390 395 400		
Thr Pro Asp Ser Pro Ala Ala Arg Arg Ile Leu Lys Asn Ala Asn Ser 405 410 415		
Thr Phe Glu Glu Leu Glu His Val Arg Lys Leu Val Lys Ala Trp Glu 420 425 430		
Glu Val Gly Pro Gln Ile Trp Tyr Phe Phe Asp Asn Ser Thr Gln Met 435 440 445		
Asn Met Ile Arg Asp Thr Leu Gly Asn Pro Thr Val Lys Asp Phe Leu 450 455 460		
Asn Arg Gln Leu Gly Glu Glu Gly Ile Thr Ala Glu Ala Ile Leu Asn 465 470 475 480		
Phe Leu Tyr Lys Gly Pro Arg Glu Ser Gln Ala Asp Asp Met Ala Asn 485 490 495		
Phe Asp Trp Arg Asp Ile Phe Asn Ile Thr Asp Arg Thr Leu Arg Leu 500 505 510		
Val Asn Gln Tyr Leu Glu Cys Leu Val Leu Asp Lys Phe Glu Ser Tyr 515 520 525		
Asn Asp Glu Thr Gln Leu Thr Gln Arg Ala Leu Ser Leu Leu Glu Glu 530 535 540		
Asn Met Phe Trp Ala Gly Val Val Phe Pro Asp Met Tyr Pro Trp Thr 545 550 555 560		
Ser Ser Leu Pro Pro His Val Lys Tyr Lys Ile Arg Met Asp Ile Asp 565 570 575		
Val Val Glu Lys Thr Asn Lys Ile Lys Asp Arg Tyr Trp Asp Ser Gly 580 585 590		
Pro Arg Ala Asp Pro Val Glu Asp Phe Arg Tyr Ile Trp Gly Gly Phe		



900					905					910						
Ile	His	Asp	Ser	Phe	Phe	Glu	Arg	Glu	His	Pro	Gly	Trp	Val	Pro	Gly	
915					920					925						
Val	Cys	Val	Lys	Asn	Leu	Val	Lys	Ile	Phe	Glu	Pro	Cys	Gly	Arg	Pro	
930					935					940						
Ala	Val	Asp	Arg	Leu	Asn	Ile	Thr	Phe	Tyr	Glu	Asn	Gln	Ile	Thr	Ala	
945					950					955					960	
Phe	Leu	Gly	His	Asn	Gly	Ala	Gly	Lys	Thr	Thr	Thr	Leu	Ser	Ile	Leu	
965					970					975						
Thr	Gly	Leu	Leu	Pro	Pro	Thr	Ser	Gly	Thr	Val	Leu	Val	Gly	Gly	Arg	
980					985					990						
Asp	Ile	Glu	Thr	Ser	Leu	Asp	Ala	Val	Arg	Gln	Ser	Leu	Gly	Met	Cys	
995					1000					1005						
Pro	Gln	His	Asn	Ile	Leu	Phe	His	His	Leu	Thr	Val	Ala	Glu	His	Met	
1010					1015					1020						
Leu	Phe	Tyr	Ala	Gln	Leu	Lys	Gly	Lys	Ser	Gln	Glu	Glu	Ala	Gln	Leu	
1025					1030					1035					1040	
Glu	Met	Glu	Ala	Met	Leu	Glu	Asp	Thr	Gly	Leu	His	His	Lys	Arg	Asn	
1045					1050					1055						
Glu	Glu	Ala	Gln	Asp	Leu	Ser	Gly	Gly	Met	Gln	Arg	Lys	Leu	Ser	Val	
1060					1065					1070						
Ala	Ile	Ala	Phe	Val	Gly	Asp	Ala	Lys	Val	Val	Ile	Leu	Asp	Glu	Pro	
1075					1080					1085						
Thr	Ser	Gly	Val	Asp	Pro	Tyr	Ser	Arg	Arg	Ser	Ile	Trp	Asp	Leu	Leu	
1090					1095					1100						
Leu	Lys	Tyr	Arg	Ser	Gly	Arg	Thr	Ile	Ile	Met	Ser	Thr	His	His	Met	
1105					1110					1115					1120	
Asp	Glu	Ala	Asp	Leu	Leu	Gly	Asp	Arg	Ile	Ala	Ile	Ile	Ala	Gln	Gly	
1125					1130					1135						
Arg	Leu	Tyr	Cys	Ser	Gly	Thr	Pro	Leu	Phe	Leu	Lys	Asn	Cys	Phe	Gly	
1140					1145					1150						
Thr	Gly	Leu	Tyr	Leu	Thr	Leu	Val	Arg	Lys	Met	Lys	Asn	Ile	Gln	Ser	
1155					1160					1165						
Gln	Arg	Lys	Gly	Ser	Glu	Gly	Thr	Cys	Ser	Cys	Ser	Ser	Lys	Gly	Phe	
1170					1175					1180						
Ser	Thr	Thr	Cys	Pro	Ala	His	Val	Asp	Asp	Leu	Thr	Pro	Glu	Gln	Val	
1185					1190					1195					1200	
Leu	Asp	Gly	Asp	Val	Asn	Glu	Leu	Met	Asp	Val	Val	Leu	His	His	Val	



1205	1210	1215
Pro Glu Ala Lys Leu Val Glu Cys Ile Gly Gln Glu Leu Ile Phe Leu 1220 1225 1230		
Leu Pro Asn Lys Asn Phe Lys His Arg Ala Tyr Ala Ser Leu Phe Arg 1235 1240 1245		
Glu Leu Glu Glu Thr Leu Ala Asp Leu Gly Leu Ser Ser Phe Gly Ile 1250 1255 1260		
Ser Asp Thr Pro Leu Glu Glu Ile Phe Leu Lys Val Thr Glu Asp Ser 1265 1270 1275 1280		
Asp Ser Gly Pro Leu Phe Ala Gly Gly Ala Gln Gln Lys Arg Glu Asn 1285 1290 1295		
Val Asn Pro Arg His Pro Cys Leu Gly Pro Arg Glu Lys Ala Gly Gln 1300 1305 1310		
Thr Pro Gln Asp Ser Asn Val Cys Ser Pro Gly Ala Pro Ala Ala His 1315 1320 1325		
Pro Glu Gly Gln Pro Pro Pro Glu Pro Glu Cys Pro Gly Pro Gln Leu 1330 1335 1340		
Asn Thr Gly Thr Gln Leu Val Leu Gln His Val Gln Ala Leu Leu Val 1345 1350 1355 1360		
Lys Arg Phe Gln His Thr Ile Arg Ser His Lys Asp Phe Leu Ala Gln 1365 1370 1375		
Ile Val Leu Pro Ala Thr Phe Val Phe Leu Ala Leu Met Leu Ser Ile 1380 1385 1390		
Val Ile Leu Pro Phe Gly Glu Tyr Pro Ala Leu Thr Leu His Pro Trp 1395 1400 1405		
Ile Tyr Gly Gln Gln Tyr Thr Phe Phe Ser Met Asp Glu Pro Gly Ser 1410 1415 1420		
Glu Gln Phe Thr Val Leu Ala Asp Val Leu Leu Asn Lys Pro Gly Phe 1425 1430 1435 1440		
Gly Asn Arg Cys Leu Lys Glu Gly Trp Leu Pro Glu Tyr Pro Cys Gly 1445 1450 1455		
Asn Ser Thr Pro Trp Lys Thr Pro Ser Val Ser Pro Asn Ile Thr Gln 1460 1465 1470		
Leu Phe Gln Lys Gln Lys Trp Thr Gln Val Asn Pro Ser Pro Ser Cys 1475 1480 1485		
Arg Cys Ser Thr Arg Glu Lys Leu Thr Met Leu Pro Glu Cys Pro Glu 1490 1495 1500		
Gly Ala Gly Gly Leu Pro Pro Pro Gln Arg Thr Gln Arg Ser Thr Glu		

1505	1510	1515	1520
Ile Leu Gln Asp Leu Thr Asp Arg Asn Ile Ser Asp Phe Leu Val Lys	1525	1530	1535
Thr Tyr Pro Ala Leu Ile Arg Ser Ser Leu Lys Ser Lys Phe Trp Val	1540	1545	1550
Asn Glu Gln Arg Tyr Gly Gly Ile Ser Ile Gly Gly Lys Leu Pro Val	1555	1560	1565
Val Pro Ile Thr Gly Glu Ala Leu Val Gly Phe Leu Ser Asp Leu Gly	1570	1575	1580
Arg Ile Met Asn Val Ser Gly Gly Pro Ile Thr Arg Glu Ala Ser Lys	1585	1590	1595
Glu Ile Pro Asp Phe Leu Lys His Leu Glu Thr Glu Asp Asn Ile Lys	1605	1610	1615
Val Trp Phe Asn Asn Lys Gly Trp His Ala Leu Val Ser Phe Leu Asn	1620	1625	1630
Val Ala His Asn Ala Ile Leu Arg Ala Ser Leu Pro Lys Asp Arg Ser	1635	1640	1645
Pro Glu Glu Tyr Gly Ile Thr Val Ile Ser Gln Pro Leu Asn Leu Thr	1650	1655	1660
Lys Glu Gln Leu Ser Glu Ile Thr Val Leu Thr Thr Ser Val Asp Ala	1665	1670	1675
Val Val Ala Ile Cys Val Ile Phe Ser Met Ser Phe Val Pro Ala Ser	1685	1690	1695
Phe Val Leu Tyr Leu Ile Gln Glu Arg Val Asn Lys Ser Lys His Leu	1700	1705	1710
Gln Phe Ile Ser Gly Val Ser Pro Thr Thr Tyr Trp Val Thr Asn Phe	1715	1720	1725
Leu Trp Asp Ile Met Asn Tyr Ser Val Ser Ala Gly Leu Val Val Gly	1730	1735	1740
Ile Phe Ile Gly Phe Gln Lys Lys Ala Tyr Thr Ser Pro Glu Asn Leu	1745	1750	1755
Pro Ala Leu Val Ala Leu Leu Leu Leu Tyr Gly Trp Ala Val Ile Pro	1765	1770	1775
Met Met Tyr Pro Ala Ser Phe Leu Phe Asp Val Pro Ser Thr Ala Tyr	1780	1785	1790
Val Ala Leu Ser Cys Ala Asn Leu Phe Ile Gly Ile Asn Ser Ser Ala	1795	1800	1805
Ile Thr Phe Ile Leu Glu Leu Phe Asp Asn Asn Arg Thr Leu Leu Arg			

1810	1815	1820
Phe Asn Ala Val Leu Arg Lys Leu Leu Ile Val Phe Pro His Phe Cys		
1825	1830	1835 1840
Leu Gly Arg Gly Leu Ile Asp Leu Ala Leu Ser Gln Ala Val Thr Asp		
	1845	1850 1855
Val Tyr Ala Arg Phe Gly Glu Glu His Ser Ala Asn Pro Phe His Trp		
	1860	1865 1870
Asp Leu Ile Gly Lys Asn Leu Phe Ala Met Val Val Glu Gly Val Val		
	1875	1880 1885
Tyr Phe Leu Leu Thr Leu Leu Val Gln Arg His Phe Phe Leu Ser Gln		
	1890	1895 1900
Trp Ile Ala Glu Pro Thr Lys Glu Pro Ile Val Asp Glu Asp Asp Asp		
	1905	1910 1915 1920
Val Ala Glu Glu Arg Gln Arg Ile Ile Thr Gly Gly Asn Lys Thr Asp		
	1925	1930 1935
Ile Leu Arg Leu His Glu Leu Thr Lys Ile Tyr Leu Gly Thr Ser Ser		
	1940	1945 1950
Pro Ala Val Asp Arg Leu Cys Val Gly Val Arg Pro Gly Glu Cys Phe		
	1955	1960 1965
Gly Leu Leu Gly Val Asn Gly Ala Gly Lys Thr Thr Thr Phe Lys Met		
	1970	1975 1980
Leu Thr Gly Asp Thr Thr Val Thr Ser Gly Asp Ala Thr Val Ala Gly		
	1985	1990 1995 2000
Lys Ser Ile Leu Thr Asn Ile Ser Glu Val His Gln Asn Met Gly Tyr		
	2005	2010 2015
Cys Pro Gln Phe Asp Ala Ile Asp Glu Leu Leu Thr Gly Arg Glu His		
	2020	2025 2030
Leu Tyr Leu Tyr Ala Arg Leu Arg Gly Val Pro Ala Glu Glu Ile Glu		
	2035	2040 2045
Lys Val Ala Asn Trp Ser Ile Lys Ser Leu Gly Leu Thr Val Tyr Ala		
	2050	2055 2060
Asp Cys Leu Ala Gly Thr Tyr Ser Gly Gly Asn Lys Arg Lys Leu Ser		
	2065	2070 2075 2080
Thr Ala Ile Ala Leu Ile Gly Cys Pro Pro Leu Val Leu Leu Asp Glu		
	2085	2090 2095
Pro Thr Thr Gly Met Asp Pro Gln Ala Arg Arg Met Leu Trp Asn Val		
	2100	2105 2110
Ile Val Ser Ile Ile Arg Glu Gly Arg Ala Val Val Leu Thr Ser His		

2115	2120	2125
Ser Met Glu Glu Cys Glu Ala Leu Cys Thr Arg Leu Ala Ile Met Val		
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Phe Gly Asp Gly Tyr Ile Val Thr Met Lys Ile Lys Ser Pro Lys Asp		
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Asp Leu Leu Pro Asp Leu Asn Pro Val Glu Gln Phe Phe Gln Gly Asn		
2180	2185	2190
Phe Pro Gly Ser Val Gln Arg Glu Arg His Tyr Asn Met Leu Gln Phe		
2195	2200	2205
Gln Val Ser Ser Ser Ser Leu Ala Arg Ile Phe Gln Leu Leu Leu Ser		
2210	2215	2220
His Lys Asp Ser Leu Leu Ile Glu Glu Tyr Ser Val Thr Gln Thr Thr		
2225	2230	2235 2240
Leu Asp Gln Val Phe Val Asn Phe Ala Lys Gln Gln Thr Glu Ser His		
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Asp Leu Pro Leu His Pro Arg Ala Ala Gly Ala Ser Arg Gln Ala Gln		
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